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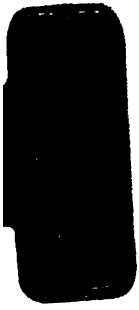

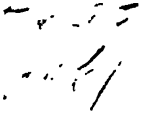

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Bradford Ritter,	Philadelphia,	Pennsylvania,	1857
William H. Pratt,	Philadelphia,	Pennsylvania,	1857
Edward Donnelly,	Philadelphia,	Pennsylvania,	1857
Henry Steiner,	Philadelphia,	Pennsylvania,	1857
Hennell Stevens,	Philadelphia,	Pennsylvania,	1857
Samuel Chapman,	Philadelphia,	Pennsylvania,	1857
Edward H. Hance,	Philadelphia,	Pennsylvania,	1857
Charles H. Eggert,	Philadelphia,	Pennsylvania,	1857
George M. Snowden,	Philadelphia,	Pennsylvania,	1857
George Cooke,	Philadelphia,	Pennsylvania,	1857
William R. Warner,	Philadelphia,	Pennsylvania,	1857
O. S. Hubbell,	Philadelphia,	Pennsylvania,	1857
Thomas Lancaster,	Philadelphia,	Pennsylvania,	1857
Henry N. Rittenhouse,	Philadelphia,	Pennsylvania,	1857

Alexander Cushman,	New York City,	New York,	1858
William J. Oliffe,	New York City,	New York,	1858
Thomas T. Green,	New York City,	New York,	1858
Ray B. Easterbrook,	New York City,	New York,	1858
Henry King,	New York City,	New York,	1858
William Egerton,	New York City,	New York,	1858
Wm. M. Somerville,	New York City,	New York,	1858
Henry A. Cassebeer,	New York City,	New York,	1858
Edward L. Milhau,	New York City,	New York,	1858
George O. Bridges,	New York City,	New York,	1858
Lewis T. Laxell,	New York City,	New York,	1858
Edward H. Marsh,	New York City,	New York,	1858
John H. Currie,	New York City,	New York,	1858
Andrew J. Parker,	New York City,	New York,	1858
Samuel N. Stebbins,	New York City,	New York,	1858
Henry R. Haydock,	New York City,	New York,	1858
Lucian F. Wheeler,	New York City,	New York,	1858
John C. Hart,	New York City,	New York,	1858
Robert A. Sands,	New York City,	New York,	1858
William Hegeman,	New York City,	New York,	1858
Fred. V. Rushton,	New York City,	New York,	1858
John D. Dix,	New York City,	New York,	1858
William A. Gellaty,	New York City,	New York,	1858
J. H. Westerfield,	New York City,	New York,	1858
Walton S. Coon,	New York City,	New York,	1858
Augustus C. Evans,	New York City,	New York,	1858
Henry Kiersted,	New York City,	New York,	1558
Tristram W. Metcalf,	Brooklyn,	New York,	1857
Alaxander Hudnut,	Brooklyn,	New York,	1857
Thomas Whitehorn,	Brooklyn,	New York,	1857
Edward R. Squibb,	Brooklyn,	New York,	1858
Robert J. Davies,	Brooklyn,	New York,	1858
George Frederick Ayling,	Brooklyn,	New York,	1858
George C. Close,	Brooklyn,	New York,	1858
H. A. Tilden,	New Lebanon,	New York,	1858
A. I. Mathews,	Buffalo,	New York,	1855
William H. Peabody,	Buffalo,	New York,	1857
H. A. Blauw,	Rochester,	New York,	1856
Alfred S. Lane,	Rochester,	New York,	1857
William Thomas,	Jersey City,	New Jersey,	1855

Andrew R. Fox,	Boston,	Massachusetts,	1858
Granville M. Clarke,	Boston,	Massachusetts,	1858
George D. Ricker,	Boston,	Massachusetts,	1858
C. H. Lyon, Jr.,	Boston,	Massachusetts,	1858
J. Bartlett Patten,	Boston,	Massachusetts,	1858
Abraham S. Wiley,	Cambridge,	Massachusetts,	1857
Henry Thayer,	Cambridge,	Massachusetts,	1858
William Gay,	Cambridge,	Massachusetts,	1858
Anthony S. Jones,	Newburyport,	Massachusetts,	1853
Charles A. Noloine,	Newburyport,	Massachusetts,	1858
David Scott,	Worcester,	Massachusetts,	1855
John Buck,	Chelsea,	Massachusetts,	1855
Dexter D. Geyer,	Gloucester,	Massachusetts,	1857
Eben Blatchford,	Rockport,	Massachusetts,	1857
B. W. Conant,	Woburn,	Massachusetts,	1858
Henry F. Fish,	Waterbury,	Connecticut,	1852
Llewellyn S. Haskell,	New York City,	New York,	1852.
George D. Goggeshall,	New York City,	New York,	1852.
John Meakim,	New York City,	New York,	1852
Eugene Dupuy,	New York City,	New York,	1852
C. B. Guthrie,	New York City,	New York,	1852
Junius Gridley.	New York City,	New York,	1853
James S. Aspinwall,	New York City,	New York,	1855
Benjamin Canavan,	New York City,	New York,	1855
John Canavan,	New York City,	New York,	1855
John Milhau,	New York City,	New York,	1855
John P. Dodge,	New York City,	New York,	1855
F. A. Hegeman,	New York City,	New York,	1855
James T. Maxwell,	New York City,	New York,	1555
Isaac Coddington,	New York City,	New York,	1855
Frederick Hale,	New York City,	New York,	1865
Fred. Thompson,	New York City,	New York,	1856
J. W. Bowers,	New York City,	New York,	1856
H. T. Kiersted,	New York City,	New York,	1856
Wm. F. Henry,	New York City,	New York,	1856
George Syme,	New York City,	New York,	1857
Henry Haviland,	New York City,	New York,	1857
George W. Berrian,	New York City,	New York,	1857
George W. De la Vergne,	New York City,	New York,	1557
John Faber,	New York City,	New York,	1857

ROLL OF MEMBERS.

[Deceased Members in Italics.]

Henry T. Cummings, M.D.,	Portland,	Maine,	1853
Charles A. Tufts,	Dover,	New Hampshire,	1856
O. Gilman Dort,	Keene,	New Hampshire,	1858
Charles A. Merrill,	Exter,	New Hampshire,	1858
George S. Kendrick,	Lebanon,	New Hampshire,	1858
S. P. Peck,	Bennington,	Vermont,	1853
J. C. Bingham,	St. Johnsbury,	Vermont,	1853
S. R. Philbrick,	Boston,	Massachusetts,	1852
Samuel M. Colcord,	Boston,	Massachusetts,	1852
Daniel Henchman,	Boston,	Massachusetts,	1853
Thomas Restieaux,	Boston,	Massachusetts,	1853
Andrew Geyer,	Boston,	Massachusetts,	1853
T. Larkin Turner,	Boston,	Massachusetts,	1853
Henry W. Lincoln,	Boston,	Massachusetts,	1853
William A. Brewer,	Boston,	Massachusetts,	1853
Thomas Hollis,	Boston,	Massachusetts,	1853
Ashel Boyden,	Boston,	Massachusetts,	1853
Henry D. Fowle,	Boston,	Massachusetts,	1853
James S. Melvin,	Boston,	Massachusetts,	1853
William W. Goodwin,	Boston,	Massachusetts,	1853
Charles T. Carney,	Boston,	Massachusetts,	1853
Robert R. Kent,	Boston,	Massachusetts,	1855
Alvah Littlefield,	Boston,	Massachusetts,	1856
Augustus P. Melzar,	Boston,	Massachusetts,	1856
Charles H. Atwood,	Boston,	Massachusetts,	1856
James Gordon,	Boston,	Massachusetts,	1857
Theodore Metcalf,	Boston,	Massachusetts,	1857
David Roberts,	Boston,	Massachusetts,	1858
William Brown,	Boston,	Massachusetts,	1858
Oliver H. Webber,	Boston,	Massachusetts,	1858
George D. Towne,	Boston,	Massachusetts,	1858
D. B. Kidder,	Boston,	Massachusetts,	1858

order and preside until after an election of officers: in case the President and Vice-President are absent, this duty shall devolve on the chairman of the Executive Committee, or in his absence on any member chosen by vote of those present.

In the absence of the Recording Secretary the President shall appoint a Secretary, pro tempore.

The order of business at the first session of each annual meeting shall be as follows:

1st. The appointment by the President of a committee of three persons to examine credentials, and report the names of those duly accredited.

2d. The Executive Committee shall report the names of new members and of persons present recommended for membership, who shall be immediately ballotted for.

3d. The roll of those in attendance, as thus completed, shall be called by the Secretary.

4th. The reports of the Standing and Special Committees shall be read by their titles, or in full, and laid on the table for future consideration.

5th. A committee to nominate officers for the ensuing year shall be appointed, consisting of one nominated by each delegation in attendance, and three members appointed by the President, from among those not delegated, to report at the opening of the next session.

The first session shall close with the reading of the President's annual report, and referring any portions requiring the action of Committees.

After the first session, the order of business shall be determined by the nature of the subjects presented and by the consent of the majority.

Section 3. During periods fixed by vote for scientific discussion and the exhibition of specimens and processes, the ordinary rules of parliamentary bodies shall be suspended, but at other times shall be enforced by the presiding officer, from whose decisions, however, appeals may be taken if required by five members, and the meeting shall thereupon decide without debate.

A motion reduced to writing and seconded shall be open to discussion, and while it is before the meeting no motion shall be received unless to amend, divide, commit, to lay on the table, postpone or to adjourn; and a motion to adjourn shall be decided without debate.

On the call of any member, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the Minutes.

Article VI.

This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.

of the standing or of a special committee, authorized to appropriate funds of the Association, such order to be countersigned by the President.

He shall present a statement of his accounts at each annual meeting that they may be audited. He shall also report to the Executive Committee, previous to each annual meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and duly notified to do so.

Article IV.—*Of the Standing Committees.*

Section 1. There shall be two standing committees elected annually—an Executive Committee, and a Committee on the Progress of Pharmacy. They shall each consist of five members, and shall elect their own Chairman.

Section 2. The Executive Committee, of which the Recording Secretary shall be one of the members, shall have charge of the revision of the roll. the investigation of applications for membership, the election of members in the recess, and the publication of the Proceedings. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, also the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by this Constitution.

The annual publication of the Proceedings shall contain the corrected roll of members, full minutes of the several sittings, the Reports of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations as the Executive Committee may deem worthy of insertion. At least one copy shall be furnished each member of the Association.

Section 3. The Committee on the Progress of Pharmacy, of which the Corresponding Secretary shall be one of the members, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy and the collateral branches, on any new works bearing on these subjects published in this country or in Europe, on the condition of the drug-market and the quality of drugs and manufactured articles, whether of foreign or domestic production, found in commerce.

Article V.—*Of the Meetings.*

Section 1. The meetings shall be held annually, or as the Association may from time to time determine; provided, that in case of failure of this from any cause, the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

Section 2. At the opening of each annual meeting, the President, or, in case of his absence, one of the Vice-Presidents, shall call the meeting to

be thought worthy of the distinction, may be elected honorary members upon the same conditions and under the same rules as appertain to active members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office or to vote at the meetings.

Section 7. Members who have paid their annual contributions for ten successive years shall be considered life members, and exempt from their yearly payments, and entitled to a certificate to that effect.

ARTICLE III.—*Of the Officers.*

Section 1. The officers shall be, a President, two or more Vice Presidents, a Recording Secretary, a Corresponding Secretary, and a Treasurer, who shall be elected annually, and shall hold office until an election of successors.

Section 2. The President shall presid eat the meetings, and administer the rules of order usual in deliberative assemblies. He shall nominate all special committees, except a majority of the members present direct a resort to ballotting or other means.

He shall sign the certificates of membership, approve all foreign correspondence, and countersign orders on the Treasurer.

He shall present at each annual meeting a report of the operations of the Association during the year, with such information pertaining to its condition and prospects and the object it has in view, together with such suggestions for its future management as may seem to him proper.

Section 3. In case of the temporary absence or inability of the President, his duties shall devolve on one of the Vice Presidents in the order of their names.

Section 4. The Recording Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays, and papers of every description received by the Association, copies or abstracts of which shall be furnished for publication as may be required.

He shall furnish the chairman of every special committee with a list of its members and a copy of the minute of its appointment, and shall notify every member of the time and place of each annual meeting. He shall be a member of the Executive Committee.

Section 5. The Corresponding Secretary shall conduct all correspondence directed by the Association, and reply to all communications addressed to it in its recess. He shall from time to time address local Associations, members, and others possessed of information likely to be of interest to the Association, and report such correspondence to the Committee on the Progress of Pharmacy, of which he shall be a member.

Section 6. The Treasurer shall collect and take charge of the funds of the Association, and shall also hold and issue the certificates of membership. He shall pay no monies unless by the order of the chairman of one

3d. To improve the science and the art of pharmacy by diffusing scientific knowledge among apothecaries and druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4th. To regulate the system of apprenticeship and employment so as to prevent as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.

5th. To suppress empyricism, and as much as possible to restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.

ARTICLE II.—*Of the Members.*

Section 1. Every pharmaceutist or druggist of good moral and professional standing, whether in business on his own account, retired from business or employed by another, who, after duly considering the objects of the Association and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

Section 2. The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said Committee. If after investigating his claims they shall approve his election, they shall at the earliest time practicable report his name to the Association, and he may be elected by two-thirds of the members present on ballot. Should an application occur in the recess, the members of the Committee may give their approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

Section 3. No person shall become a member of this Association until he shall have signed the Constitution, and paid his annual contribution for the current year. All persons who become members, shall be considered as permanent members, but may be expelled for improper conduct by a vote of two-thirds of the members present at any annual meeting.

Section 4. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution, and is liable to lose his right of membership by neglecting to pay said contribution for three successive years. Members shall be entitled, on the payment of three dollars, to receive a certificate of membership signed by the President, Vice Presidents, and Secretary, covenanting to return the same to the proper officer on relinquishing their connection with the Association.

Section 5. Every local Pharmaceutical Association shall be entitled to five delegates in the annual meetings, who, if present, become members of the Association on signing the Constitution, without being balloted for.

Section 6. Pharmaceutists, Chemists, and other scientific men who may

APPENDIX.

CONSTITUTION

OF THE

American Pharmaceutical Association.

PREAMBLE.

Whereas, The advancement of pharmaceutical knowledge and the elevation of the professional character of Apothecaries and Druggists throughout the United States are dear to us in common with all well disposed pharmaceutists; and *whereas*, a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business:—

Therefore, We the members of a Convention now met at Philadelphia, [September 1852,] composed of Apothecaries and Druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the object of deliberating on the condition of our profession, do hereby resolve and constitute ourselves into a permanent Association, to meet annually, at such times and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled, and do now adopt the following

CONSTITUTION.

ARTICLE I.

This Association shall be called the American Pharmaceutical Association. Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects:

1st. To improve and regulate the drug market, by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

2d. To establish the relations between druggists, pharmaceutists, physicians and the people at large, upon just principles, which shall promote the public welfare and tend to mutual strength and advantage.

Association but to elevate the standard of practice—to give uniformity and value to the officinal preparations—to infuse so much of science and accuracy into our art that it shall cease to be a trade only—and above all, in the language of the original preamble to our Constitution, to "elevate the professional character of Apothecaries and Druggists throughout the United States," by making them what they ought to be, masters of their art, in the sense of understanding its theory as well as its practice? In Germany and Poland, the Apothecary is required by law to make most of the preparations he sells, and thus is accountable for their quality. If it were so here, our numbers would dwindle down to a fraction of that great array that constitutes the dealers in medicine of all grades.

In making these remarks, it is from a sense of the importance of the subject to the lasting interest of our profession. Most of the gentlemen who are very largely engaged in manufacturing pharmacy are friends of the writer, who is moved by not the slightest degree of personal feeling in making the remarks;—they are thrown out as a caution to us all, that we who claim to have the welfare of our professional body at heart, may consider deeply the bearing which such innovations are having on the development and professional health of its members, and take such measures as will turn the current of this evil into a channel where its influence may be regulated as far as possible. The first remedial measure should be to insist on the clear and distinct annunciation by manufacturers of the proportional strength of preparations, and the processes employed, especially in reference to the menstrua used. Secondly, the Association should use its best endeavors to compel the adoption of uniform strength and formulæ for all standard preparations not in the Pharmacopœia, and an adherence to the processes of that authority for those that are found in it. And thirdly, to use efficient means to get the next edition of the Pharmacopœia to include all those preparations of worth, which are now known and used as unofficinal preparations.

generally so uniform in composition, and are so easily tested, that he has the power of protecting himself from imposition. Not so with the former. How easily may a worthless extract be palmed off on the apothecary, and how utterly impossible, from known data, often is it, for a tincture or fluid extract to be detected when of deficient strength, or when prepared from drugs of inferior quality.

Again, the influence of competition on quality may be illustrated by the two extracts Krameria and Compound Colocynth. Apply to almost any druggist for the officinal Extract of Krameria and you will be disappointed. Why? "Because," you are told, "the root yields so little extract to cold water that it won't pay to make it by the Pharmacopœia!" Go into the market, and you will find compound extract of colocynth varying from 75 cents to $1.50 a pound, when the scammony in a pound of the extract costs nearly $2.50 if of the best quality. Now how can a conscientious apothecary dispense a prescription with such materials? and yet it is often done by those who know better. But it is not necessary to enlarge further in this direction. Let us consider the effects of this policy of purchasing preparations on pharmacy and pharmaceutists.

Pharmacy may be defined to be the art of preparing and dispensing medicines, and embodies the knowledge and skill requisite to carry them out in practice. But if the preparation of medicines is taken from the apothecary and he becomes merely the dispenser of them, his business is shorn of half its dignity and importance, and he relapses into a simple shopkeeper. How can an apothecary properly educate his apprentices, unless he affords to them an opportunity to make the medicines they dispense? He cannot do it, and hence this policy has the gradual but certain effect to depreciate the standard of pharmacy and the status of its practitioners. Young men who enter such establishments scout the idea of its requiring four years to learn the business; and after a two years' experience in vending preparations and compounding prescriptions, are qualified clerks! at least in their own estimation. Of what avail is it to urge on such young men the advantages of chemical and pharmaceutical studies, or of graduating at a pharmaceutical institution, when they see that practical pharmacy means the retailing of drugs and preparations furnished ready for use by the druggist and "manufacturing pharmaceutist?" What is the object of our

THOUGHTS ON "MANUFACTURING PHARMACY" IN ITS BEARING ON THE PRACTICE OF PHARMACY, AND THE CHARACTER AND QUALIFICATIONS OF PHARMACEUTISTS.

By William Procter, Jr.

It has been frequently a subject of serious reflection with the writer what influence the modern custom of manufacturing galenical preparations on a large scale, has had, and will increasingly have, on the Pharmacy and Pharmaceutists of the United States. It is well known that vegetable extracts, fluid extracts, pills of all the officinal formulæ, plasters, cerates, compound powders, in fact nearly all the empyrical organic preparations of any note are now made by various large manufacturing establishments. The formulæ employed by these makers do not agree with each other, nor are they generally in accordance with the Pharmacopœia, either as regards medicinal strength or manipulation. With variable degrees of conscientiousness as regards the efficiency of preparations; and with varying knowledge and skill to effect the manipulations required, as must be expected; yet it is as rivals for a market, and in the competition which follows, that the most serious evils arise or may be anticipated. These gentlemen, like other manufacturers, take all the means considered usual or honorable by business men in creating a market. They do not wait until the slow and deliberate footsteps of the therapeutist, and his apothecary, have developed the value of remedies, and created a demand for them; but instantly on their announcement in the Journals, and often before their permanence is demonstrated, quantities of preparations are disseminated over the country and vended by parties unacquainted with their merits, or kept in store by druggists as agents until the process of deterioration renders them more or less worthless. There are many preparations which may be advantageously made on a large scale, or which owing to the nature of the material or apparatus used may be better made in one locality than another; but such are the exception, not the rule. It certainly should be the pride, as it is the duty of the Pharmaceutist, to make for himself all those important, though often not permanent, preparations which are termed galenical, as well as many chemical substances; yet there is less necessity for his preparation of the latter, because they are

concentrated alkaloids and resinoids to either the solid or fluid extracts. They purport to be the active principles of the plants, and have the same relation to the plants whence they are derived, that quinia does to the cinchonas, and morphia to opium. The alkaloids possess all and the same properties with the mineral alkalies; they crystallize, turn red litmus-paper blue, and combining with acids form perfectly defined salts. The discovery of these principles, ordinarily designated resinoids, is more recent, and only up to a certain point do they possess the peculiar characteristics of *resins*. Jalapine forms an exception. Many of these agents, styled indifferently alkaloids or resinoids, do not present any marked acid or alkaline characteristics, such as *piperine*, *asparagine*, *glycyrrhizine*, &c. These substances are more numerous than the resins, properly so called. It is often necessary, when these principles have been reduced, to combine with them certain proportions of sugar of milk, to secure an impalpable powder, in that they assume the form of an oily mixture. This fact, where it occurs, is always noted, that the doses may be rightly regulated. These agents are subject to much adulteration, but the tests are simple and easily applied.

Pharmaceutic Sugar-coated Pills and Granules.

As a means of disguising the unpleasant taste of medicines, and facilitating their administration and operation, the coating by sugar is far preferable to any other. Contact with the atmosphere is thoroughly and effectually prevented, and a short time only is necessary for the solution of the sugar in the stomach. In this way we prepare not only all our pillular extracts, but also a large number of Pharmacopœial simples and compounds, as well as other medicines in common use among physicians.

and others at an earlier period. We commenced their preparation in 1851, and quite extensively the next year.

They vary, from the solid or pillular extracts only in the degree of concentration, having the advantage, that the evaporation, not being carried so far, the active principles are less liable to injury from long exposure to heat. The general principles of manipulation are the same, but the process by which the medicinal properties of the plant are given in the fluid form admits of the preparation being made of any required strength; and inasmuch as they are designed to meet the wants of the profession in supplying a strength intermediate between the pillular extract and tincture, and for greater convenience in the apportionment of doses, with few exceptions, each pint is required to represent one pound of the crude material. Their uniform medicinal power depends upon a methodical extraction of the active principles, which may be either alkaloid, resinoid, or essential oil, separate or combined. These elements must be held in solution, so as to form a clear preparation, and all tendency to acetous fermentation be counteracted by preservative agents.

Difference of opinion exists as to the propriety of using sugar in these preparations, or indeed any other adjuvants whatever; but increasing the quantity of alcohol, and depending upon it as the preservative agent. For our own part, we do not think any arbitrary rule in this respect proper or safe. The characteristics of each article should govern this, it being the duty of the manufacturer to prepare these articles in sufficient variety to meet the wants of the physician, to represent the crude material in a form at once ready for administration and as palatable as the skill of the manufacturer can make them.

The advantages of the fluid extracts, are their uniformity of strength, convenience, permanence, and agreeableness. Administered in this form, the medicine is with much greater facility taken into the system, in consequence of the absence of inert matter; its action is almost immediate, and the physician is enabled to regulate the dose with greater ease and certainty.

Alkaloids and Resinoids.

A considerable portion of the profession prefer the highly

verse, and hence the comparison of preparations be unfair. The next season, the very reverse of season and situations may occur with like results. I have given considerable attention to this subject, and believe that the average results of a number of year's experience would show the cultivated plants to have medicinal powers equal to the foreign, provided the plant is properly cultivated with reference to the development of its active medicinal principles, and not to a succulent growth, by the introduction of the proper salts into the soil.

Solid or pilular Extracts.

It has long been an important desideratum in medicine, how to obtain medicinal preparations in their greatest purity and concentration. The form of the solid or pillular extracts being the simplest, as well as the most convenient for administration, became the one most employed. In those prepared by us, the general principles above stated are invariably applied.

Ordinary inspissated extracts are not very reliable, because the expressed juice does not contain the entire constituent, much being thrown away in the pulp.

In making this class of extracts, the practice is frequently adopted of reserving the chlorophylle or green coloring matter, which separates on first heating the expressed juice, keeping it, and when the extract is nearly concentrated, mixing it with the extract to give it a green color: this being usually considered the test of good quality. It will be readily perceived that this test is not infallible, and that a worthless extract may have a fine, green appearance.

It has been the subject of much discussion, whether the chlorophylle should be retained in the extract or not. We were early of the opinion, that as it contained no medicinal activity whatever, it should be taken out; but the complaints made by apothecaries, that it is difficult to dispense the clarified extract, from its tenacity, has caused us, in latter years, to retain it. To prevent decomposition, the extract that contains it should be made as dry as possible, and yet retain the pillular consistence.

Fluid Extracts.

This class of preparations was first introduced into the U. S. P. in 1850, having been made to a limited extent by Prof. Procter

All substances treated should be known to be in a proper state for use; and to fully carry out the general plan, we have adopted the practice of extensively cultivating many varieties, which it is difficult to obtain, otherwise, in sufficient quantity of proper quality. Principal among these are the narcotics, such as conium, belladonna, hyoscyamus, stramonium, digitalis and lettuce; all of these being limited to a certain state or condition of growth for manufacturing purposes. They are used in the green state, the plant being first ground to a pulp, the juice then expressed and clarified and the pulp subjected to the action of alcohol.

The cultivation of medicinal plants really involves as much science as their subsequent manipulation. Organic chemistry has thrown much light on the subject. By an analysis of the plant and the soil upon which it is proposed to grow it, the nutriment necessary to its perfect development is determined. The variation in climate, character of seasons, either hot or cold, wet or dry, have a controlling influence upon their development, and in no other way can we account for the variations which often occur in the medicinal power of preparations from plants, of different years' growth, the manipulation of each year having been conducted in a similar manner. These circumstances are beyond the control of the manipulator and can be modified but partially.

The question of the comparative value of extracts made from the cultivated and foreign plants, as hyoscyamus and belladonna, has been before the public for years. I am now instituting a series of experiments upon the subject, which I should be pleased to report on next year. Of the imported extracts we are not informed whether they are made from the *indigenous* or *cultivated* plants. Hyoscyamus is extensively cultivated, and much of the *annual* plant is also cultivated in England. To arrive accurately at a comparison, the same general circumstances should occur with both. The extract hyoscyamus under examination may be made, the one sample, from the first year's growth; the other, from the second; and the imported leaf tried here be of the first year's; that cultivated, the second.

Also, there may exist in the country where the plants are indigenous, a state of things favorable to a full development of its medicinal principles: here, the same season may be the exact re-

constituents such as *starch*, *gum* and *extractive*, which increase the bulk of the extract and lessens its activity.

The volatile portions, the essential oils and the aroma should be nearly or wholly preserved, for although they do not always form the principal active ingredients, yet they exercise a modifying, if not controlling influence over the other principles of the plants.

After obtaining the required solution, the reduction to the consistency required is the next important point, and as the result both of scientific deduction and experiment, it is proven that *evaporation* in *vacuo* affords the most perfect means of preservation.

Our investigation into all the principles involved in the preparation of medicinal extracts, and the various plans and processes in use in England, France and Germany, such as evaporation over a naked fire, sand and vapor bath, solar heat, and with currents of dry air, convinced us that they were all objectionable, inasmuch as the high temperature and oxydizing effects of the atmosphere are fatal to the delicate principles involved; deciding us upon the use of the vacuum evaporation exclusively, and by a process somewhat analogous to that used in refining sugar. Accordingly, in 1848, we erected our apparatus, which has since undergone such alterations and modifications as experience suggested, adapting it to its specific application.

The apparatus consists of thirteen air-tight evaporators, from which the air is exhausted by an air pump, kept in constant operation by a steam engine, the exhaust steam of which is used to keep the temperature of the material within, at 100° F.

The advantage of this mode of evaporation is, that the solution may be evaporated rapidly, not only out of contact with the atmosphere, so that its principles cannot undergo oxydation, but also that at the low temperature of 100° F. the chemical changes, that usually occur at high temperature, are not observable, and the preparations preserve the odor, color and characteristics of the plant.

Most vegetable substances are very delicate and are easily injured by heat, particularly the narcotics, causing a conversion of fixed soluble principles into insoluble, and therefore inert compounds.

MEDICINAL EXTRACTS.

By H. A. TILDEN.

This department of pharmacy is one of increasing interest and value to the medical profession, and has occupied much of the attention of scientific and practical pharmaceutists. It embraces within its range the entire vegetable kingdom, plants whose medicinal properties have been investigated and determined, as well as those whose efficacy has been slightly investigated, and which are, therefore, comparatively unknown. It really is limited only by the extent of researches for means of relief to the human race.

This branch of pharmacy may be treated for the sake of convenience under two heads:

1st. The production of a solution of the active medicinal principles of the substances treated.

2d. The reduction of this solution by evaporation to the consistence of an extract, solid or fluid.

In the production of the solution it must always be borne in mind that a large number of the articles treated are of a delicate, volatile and complex nature. The great aim is to secure the active medicinal principles of the plant in as concentrated form as possible, divested as much as possible of the accompanying inert matter. To obtain this object requires not only much previous experience in the adaptation of solvents to the peculiar characteristics and active medicinal constituents of the article under treatment, but much precaution in the subsequent manipulation, particularly evaporation in the most careful manner, until the required consistence is produced.

These solvents are generally water, alcohol, diluted alcohol, ether and acetic acid. In forming the solution to be evaporated, it is important that that solvent be selected most appropriate to the particular case, or when necessary a combination of several, or a succession of different solvents be employed. Our own experience has convinced us that alcohol should in general be used instead of water, as the action of the latter upon the active principles of most vegetables is feeble, while it dissolves

amount of capital invested in this industry in our State, and its returns:

2100 acres of Land and Improvements are valued at	$75,000
Total average value of Oil to producers . . .	37,500
Total cost of Production, including interest upon $75,000 at 7 per cent.	24,000
Profit to producers	13,500

This profit is over one-third the receipts for the oil, and 18 per cent. upon the capital employed. Assuming that there are 500 acres in Mint plant in Western New York, and 500 acres in Ohio, which, I presume, is nearly correct, at least a low estimate, and that the average product of the New York plantations be 12 lbs. of oil to the acre, while that of Ohio is reckoned at 8 lbs., the total annual product of these States will be 10,000 lbs., valued at $25,000—making the average value of the whole crop of oil of Peppermint produced annually in the United States to be over $63,000 to its producers.

Having in view the general interest felt by our profession in such matters, I was led to prepare this Report; and if, gentlemen, it has served to instruct, or even entertain you, I shall rest satisfied, only expressing the hope that it may induce members who possess the opportunities requisite, to convey to the Association such information as they can collect relative to those industries of our country, appertaining to our pursuits, and concerning which the general knowledge is as yet limited and indefinite.

In conclusion, I desire to express my obligations to those gentlemen interested in the Mint product throughout our State, for the valuable aid they have afforded me; particularly to Messrs. S. C. Coffinberry, and Wm. H. Roys, of Constantine.

dred, are in the county of St. Joseph. It produces in oil, per acre, as follows:

Maximum	20 lb. av.
Minimum	2 "
Average	7 "

In England, at Mitcham, where the Mint plant is raised in richly manured land, the average yield is stated to be 17½ lbs. to the acre. Upon the plantations of the Messrs. Hotchkiss in Western New York, the average yield is said to be 20 lbs.

The average product per annum in this State has been as follows, from the commencement to the present time:

Maximum	30,000 lbs.
Minimum	8,000 "
Average	15,000 "

The crops vary, for several reasons. That of 1855 was large, being 30,000 pounds; the dry season following, it was reduced to one sixth, *i. e.* to 25,000 pounds; and the severe cold of the winter of '56 and '57, by killing the roots, reduced the crop to one-half that of '55, it being variously estimated from 12,000 to 15,000 pounds.

The prices obtained by producers of the oil have been as follows:

Highest price per lb. . . .	$4.00
Lowest price per lb. . . .	1.25
Average price per lb. . . .	2.37

There having been as much sold at $1.25 as at $4.00, the average is taken between $1.75 and $3.00, the usual prices. The prices ranged somewhat as following: 1844 to 1847, at $2.50; 1847 to 1852, at $1.50; 1853, at $2.00; 1854, at $4.00; 1855; at $3.50; 1856, at $2.50; 1857, the crop of which is yet partially unsold, from $2.00 to $2.50.

The land, with its improvements, is valued from $30 to $35 per acre. The cost of cultivating a Mint field the first year is $22 per acre; and for the succeeding three years, $5 a year per acre.

The following statement will show an approximation to the

ceiver. A tube or pipe extends from the top of the boiler to the bottom of the steam tub, or still.

The whole structure is generally covered with a temporary shed, for protection against the weather—this covering being open upon the sides. Underneath the covering is erected a plank floor, twelve or fifteen feet square, to receive the Mint. This floor stands at a level with the top of the steam tub, or still.

After the boiler has been supplied with water, the fire is started in the arch, the Mint has been drawn in from the cock, and deposited on the plank floor, from whence it is pitched with a hay fork into the still, and packed down as it is thrown in, by one of the hands, who goes into the tub for that purpose, and packs it with his feet until the still can receive no more. This is called a "charge." The movable lid is then adjusted, and the steam applied from the boiler. The essential oil of the Mint passes with the steam into the worm ; is condensed with it,* and passes into the receiver, where it rises to the top of the water. As the receiver gets filled, the water constantly escapes by the spout, while the oil is dipped off, and placed in cans ready to receive it. When the charge is exhausted, and yields no more oil, the steam is shut off; the lid of the steam tub, or still, thrown open, and the reeking contents removed with hay forks. This is called "Mint straw." Horned cattle and sheep are fond of it, and will subsist upon it through the winter. It is thrown into large piles about the Mint still, after being dried, or else drawn into barns, where it lies till fed to the cattle in the winter.

The oil cans are made of the best tinned-iron, after the model of the tin powder cans, and contain each twenty pounds of oil. In these cans the oil is shipped, the small aperture at the top being soldered. Three, four, or five cans are placed in a case, the tops of which are sloped like a house roof.

There are now in this State about 2100 acres employed in producing the Mint plant, all of which, except about one hun-

* By exhausting each charge as rapidly as possible, by using steam under as high a pressure as the strength of the boiler will warrant, it is found that though the yield of oil is lessened, it is nearly colorless and of a firm odor.

it can be wilted in damp, cloudy, or rainy weather. The process of distilling is facilitated much by wilting the herb, as the bulk being thereby reduced from one-third to one-half, the greater quantity can be compressed into the same capacity of the vessel used in the process of distillation.

4th. Good dry and well-preserved fuel is necessary, which, from its great combustibility, will generate steam the most rapidly.

The apparatus used in distilling the oil is—

1st. A boiler with a flat bottom of boiler iron, and a circular top of sheet iron. The boiler is about nine feet in length, and thirty inches in diameter, with three flues six inches each in diameter. The boiler is set upon a brick arch, which receives the fuel.

2d. A well and hand-pump to supply the boiler and other apparatus hereinafter described.

3d. A round tub, made of pine or whitewood staves, hooped with iron bands; the staves from one and a half to two inches thick, the tub four feet six inches deep, and six feet in diameter. This tub is set up from the ground from three to six inches, on bricks or wooden blocks; one-half or one-third of the top, or head, is constructed with the tub—that is, it is set in a groove in the staves like a barrel head, leaving an aperture of half or two-thirds of the circumference of the top. To this aperture is fitted a movable lid, which shuts down tightly, and can be, when shut down, made steam-tight by means of oakum stuffing.

4th. A cooler; being a large tub, set two feet from the ground, filled with water, and containing a worm of tinned-iron, about one hundred feet long, the lower end of which projects through one side of the cooler, about three inches from the bottom; the upper end of the worm connects by a pipe of similar material, with the top of the first described tub, which tub is called "the steam tub," or "still."

5th. A receiver of tin, placed under the opening of the lower end of the worm. The receiver is eighteen inches deep, and ten inches in diameter; from the bottom of this there issues a discharging pipe at an angle of about 25°, similar to the spout of a coffee pot, and extends at that angle to its extremity, which stands at an elevation of an inch or two below the top of the re-

of which are cut with the Mint and go into the process of distillation with it. The Fireweed yields an essential oil of no value, which is pungent and somewhat bitter. It is the only plant which grows with the Mint that yields an essential oil. It is somewhat difficult to detect in the Mint oil, unless mixed in the ratio of more than fifty per cent., except by the specific gravity of the mixed oil; the pure Fireweed oil requires eighteen fluid ounces to weigh one pound avoirdupois, *i. e.* a quantity of weed oil equal to one pound of Mint oil in bulk weighs but fourteen ounces avoirdupois.

It will be seen from the foregoing that this weed oil finds its way into a very large proportion of the oil of Peppermint produced, either by accident or design. It has indeed often been used by unscrupulous persons and producers in adulterating their Mint oil; some have been known to distill it pure, for that purpose, from the weed gathered in waste fields and fallow grounds.

The Fireweed oil, spirits of turpentine and high proof alcohol constitute the only materials known, that are used in adulterating the pure Mint oil; though it may be presumed that bland fixed oils are often used for the same purpose. The odor, and less specific gravity of the weed oil best serves to detect its presence in Mint oil, as also that of turpentine. Washing it with water will remove the greater portion of the alcohol from oil adulterated with it. Any fixed oil contaminating it, is detected by the greasy stain such mixed oil leaves upon paper, and is removed by re-distillation. The specific gravity of pure oil Peppermint when fresh is 0·902.

It is usually of a pale yellow color, sometimes almost white, or of a slight greenish tint; as it grows old it becomes more or less oxidized, and assumes a reddish color.

The precautions necessary to produce a superior product, both as to quantity and quality, are—

1st. To distill, from new or young Mint, the first crop of rich and well cultivated land.

2d. Tight and well constructed apparatus.

3d. Cutting, wilting, and distilling the plant in still, dry weather, as much oil may escape, on account of its great volatility, before it reaches the still, in windy weather, and before

This, in a measure kills the weed, (this "renewing," as it is called, is sometimes done the third year, and every following third year until the field is employed for other crops,) the broken roots send up new and tender shoots, and a fair crop is again obtained without any further labor than plowing the field.

The fifth year, without any further attention, produces a crop equal to the second; after which, the field is pastured and reclaimed for other crops.

The first year produces the best quality of oil, the highest yield per acre, and the greatest yield to the quantity of herb.

Some few Mint-farmers raise the plant from the seed, carefully cultivating the ground, and protecting the young shoots from the early frosts, the Mint not being cut until the second year of its growth from the seed. Those who operate in this manner, usually re-set their fields every two years, planting them with new Mint, raised in a nursery, from the seed. Others, still, plant the roots in the fall, after the crop is gathered, cultivate and hoe it in the spring following, until it reaches the height of a foot or so. After the crop is gathered, the Mint stubble is again plowed under, and harvested the second season without cultivating or hoeing.

The weed which has been mentioned is the only one the planter has to contend with after the first year's cultivation, and there is no means of entirely subduing it. After the first year, the Mint roots, which naturally tend to the surface, and the stems, which naturally tend to seek the earth, and root in it from the joints, form a superficial network over the whole field, suppressing every other weed, and leaving no means of subduing this weed, without injuring the crop. This weed is known by the several names of *Horse-tail weed*, *Cow's-tail*, *Mare's-tail*, *Fieldbroom*, *Bitterweed*, and *Fireweed;* its botanical name, *Erechthites hieracifolius*. It grows throughout the United States in moist woods, and in the rank soil of recent clearings; its odor is peculiar, and somewhat disagreeable, depending upon a volatile oil. It is employed somewhat in medicine, particularly by the Eclectics. This plant, after it gains a foothold in the Mint field, the third year, is accompanied by June grass, both

or four weeks, the horse and cultivator (the common corn cultivator) are introduced, and followed by the hoe. This process is repeated twice or three times. When the Mint has grown and spread to the size of rows of beach leaves or half grown potatoes, the hoe is again plied for the last time, in the early part of August, and this completes the culture of the crop. This keeps down the indigenous weeds, and when the mower goes into the field, in the latter part of the same month, he finds the ground nearly, if not entirely, covered with Mint.

The cutting and distilling commences about the 25th of August, and continues until the 1st of October, during which period the plant is in full inflorescence, and the lower leaves begin to grow sere. If the season has been unusually dry, and there comes a rain, the Mint is allowed to stand from one to three weeks longer than if otherwise, as it is rendered more productive of oil—wet seasons being considered more favorable than dry ones. It is cut the first year by a cradle with two fingers, and grass scythe. It is raked together in small cocks, where it is suffered to wilt ten or twelve hours. If convenient, wilting the plant, as well as increasing the yield of oil slightly, enables the operator to get it more compactly into a smaller compass. From the cock, it is taken to the distillery, which will be hereafter described.

The next year there is nothing to do to the Mint field but to cut and distill its product. During this (the second year), a few weeds make their appearance, but not to the injury of the crop, though the most careful of the Mint-growers go through their fields, and destroy them as much as possible. The second year the stalk or stem of the Mint is coarse, and the leaves not so abundant as before, so that the second crop is not so productive as the first.

The third year there is nothing to do but to harvest and distill the Mint. The stem is coarser than before, and the leaves still less abundant. The weed this year abounds, and if not removed and destroyed (a task involving much labor), half or more of the product of the field is weed, and the yield of oil and herb consequently reduced to one-half, or less than one-half, that of the first year.

The fourth year, the field is plowed up early in the spring.

gained the desired end of this monopoly, a large fortune, ceased to enforce the contracts, which, by this time, were not greatly regarded or observed by the producers. By this time, also many of the producers had amassed fortunes from their Mint product, retired from the business, and seeded down their farms; other fields had run out, and new ones converted into Mint fields; the production of the oil again became general, and has since continued so, but limited mostly to Florence.

I will now proceed to state the method of culture, and the minutiæ concerning the distillation of the oil.

The Peppermint plant requires a deep, rich, warm soil. The opening lands of Southern Michigan, which are mixed with sand, black loam, and some clay, are most productive in oil, if not in quantity of herb to the acre. The ground is prepared by deep plowing and harrowing, as for oats, potatoes, or other summer products, in early spring, say from the middle of April to the 20th of May, or as soon as an acre or so can be plowed to commence with, in order to get the roots of the Mint planted before they begin to sprout. The ground is furrowed as for potatoes, with the furrows fifteen, eighteen, or twenty-four inches apart. The roots are prepared by plowing up an old field of Mint ground, from which they are raked out with rakes, potato hooks, etc., loaded on a wagon like a load of straw, and drawn to the new Mint ground. The best roots are taken from fields planted the preceding year, and it requires about one acre of such to furnish roots enough to plant ten acres anew. The planter goes to the stack of Mint-roots in the corner of the field, or wherever they may have been deposited, fills a bag half full of them (which are light), swings it over his neck, and under his left arm; taking a bunch of roots from the bag, he holds it in his left hand, passes along a furrow, tearing off a root, or a small parcel of the roots, as is most convenient, from the bunch in his left hand, he drops it, or them, into the furrow, covering them with his right foot, and stepping on them with his left one, as he proceeds. It is an object to plant the roots so thick in the furrow as to form a continuous connection, or chain. This is called "setting Mint." A man will set from half to three-quarters of an acre in a day.

As soon as the Mint is seen above ground, usually in three

merchandise suited to their trade. As the product increased, these merchants acted as agents for eastern dealers, who bought, sold or exported it, shipping it to Europe, where it was principally disposed of in the Liverpool market.

The Mint oil being a fancy product, and not a substantial staple commodity of commerce, the surplus, after our own and the European market was supplied, was of little value until there occurred a new demand. As a natural consequence, competition in speculation upon its purchase and sale in the City of New York became hazardous, there being many houses more or less engaged in the business. At this time (about 1844) the house of Patterson, Stone & Co., in that city, adopted the following enterprise, with the view of monopolizing the trade in Mint oil:

This house first sent an agent to Europe, to determine the amount of the demand in the Liverpool market. This he did, and ascertained it to be about 12,000 pounds per annum. They then sent another agent west, to determine the amount of the product annually. This agent found plantations in Wayne and other counties in Western New York; others still larger in the counties of Ashtabula, Geauga, and Cuyahoga, Ohio; and finally those of Florence in this State. The plantations in New York did not produce enough, those in Ohio too much, and those in Florence just about the quantity required to supply the Liverpool market. He consequently entered into contract with the producers in New York and Ohio, whereby he bound them under heavy penalties to plow up their Mint fields, and destroy the roots, and not plant any more Mint or sell or give away any roots, or produce or sell any Mint oil for the period of five years, and paid them one dollar and fifty cents per acre as a bonus for so doing. He then contracted with the producers of St. Joseph County to pay them two dollars and fifty cents for their Mint oil, delivered at such agencies as he established in the county for that purpose, for a like period of five years, binding them under heavy forfeitures not to sell roots to any one, not to extend their own plantations themselves, and to deliver every ounce of Mint oil produced by them to the agents under the contract. These contracts continued to be observed for about three years, by the producers, when the house having

The Association having invited reports from its members upon subjects of similar character, I trust that the following remarks, which relate more particularly to the introduction of the culture of peppermint into Michigan, the methods there employed for growing the plant, and the processes of distilling its oil, may prove of interest and value.

For the last ten years, the largest proportion of the oil of peppermint produced in the world, has been sent from one county (St. Joseph) in the south-western part of Michigan. The plant was cultivated for its oil in New York and in Ohio for many years previous to its first introduction into this State, but, from want of sufficient and authentic data, I am unable to give you any account of its early cultivation in those States, and will therefore confine my remarks, principally, to that portion of its history and culture which relates to the State in which I reside.

It was first introduced into St. Joseph County in 1835, by Calvin Sawyer, who brought the roots from Ohio, and made the first plantation on Pigeon Prairie, in the township of White Pigeon. In the spring of 1836, two farmers, named White and Earl, procuring roots from Calvin Sawyer, made plantations on the same prairie, and in the same township. In 1837, the number of plantations was increased by others; and in 1838, Marshal Craw and Lewis Ranney commenced its culture on burr oak soil, in Florence township of the same county. In the soil of these burr oak openings, as they are termed (being rich, loamy, and gently undulating, covered here and there with a scant growth of the burr, or scrub oak), the Mint was found to produce better than on the prairie soil, where it not only required more labor to cultivate it, but was often unprofitable, from the roots being winter-killed, occasioned by the snow being blown off the level fields, and thus exposing the ground to the influence of the frost; its cultivation being abandoned on the prairies, it was thereafter limited to the township of Florence, where it has principally been cultivated ever since, there being but little over one hundred acres employed in Mint, *outside* of St. Joseph County, in the whole State.

During the first year of its production, the oil was purchased by the village merchants, and exchanged in New York City for

I was once cognizant of a sale of quite a lot of tinctures, the balance of a stock belonging to a country physician. They had been kept in demijohns, in an exposed situation, for ten years. Competent judges pronounced them excellent, and I found them upon trial to be of superior quality. I have now on hand, hydro-alcoholic fluid extracts, made five years ago, which have been kept in different situations to test their permanency; those extracts show that five years' time improves rather than injures their quality. The alcoholic or spirituous flavor which newly made fluid extracts and tinctures are apt to have, has entirely disappeared, and one used to manipulating with different plants can at once tell by the flavor which extract he examines.

I need only refer to the incidental advantage which the use of alcohol gives us, as this paper is reaching undue limits. I refer to its power of solution, by which the precipitates are redissolved, and the extract made "perfectly transparent." While, by the use of sugar, such albuminous and starchy matters as happen to be present are retained, by the use of alcohol these substances are precipitated, and the perfected extract very soon clarifies itself from such inert matter.

I have thus endeavored to prove that alcohol is a more available antiseptic agent for fluid extracts than sugar, and believe that, until some new agent is discovered, which in point of economy, of ease of manipulation and power of solution shall supersede it, we shall have to resort to it for these purposes.

THE PEPPERMINT PLANTATIONS OF MICHIGAN.

By Frederick Stearns, of Detroit.

You are all aware how conspicuous a place is occupied in our list of the Materia Medica by the essential oils, and doubtless that, of those largely produced in the United States, the oil of the *Mentha Piperita* is the most important, both in its relation to Medicine and to Commerce; and I further venture to say that, among those essential oils, there is no one of them concerning which so little is generally known of its history, culture, and production, as of this of which my paper treats.

preserves, the surgeon who covers with alcohol his anatomical preparation, the quack who adds alcohol to his bitters, the family man who stops fermentation in his currant wine with alcohol, the fruit fancier who keeps his extra-sized pear in alcohol, and the sea captain who brings to his wife an unpealed nutmeg preserved in the same way, all show how universally this power of alcohol is acknowledged.

The only objection I have heard urged against the use of alcohal in fluid extracts is, that its therapeutic effects may interfere with the desired effects of the medicinal principles. Unless we believe that the smaller the dose, the greater the effect, we can hardly believe that this argument has much weight. Fluid extract of valerian is one of our most alcoholic fluid extracts. Valerian is given to quiet nervous irritation and excitement, while alcohol exerts a contrary effect; yet this fluid extract is used very extensively, and its value is generally acknowledged. The truth is, that the amount of alcohol taken is small, and its effects are overpowered by the medicinal agent; and even if taken alone, alcohol in so small amount, would exert but little effect. The honest answer, however, to this argument is this; that the physician, when prescribing a remedy, will choose some other galenical preparation, should he meet a case where the alcohol in a fluid extract is inadmissable.

Of all our galenical preparations, tinctures are the most permanent; and instead of deteriorating they generally grow better, mellowing by age. Tr. Opii Camph., Spts. Lavand. Comp. and Tr. Aloes et Myrrhæ are always preferred when age has mellowed them, and many druggists are in the habit of adding certain chemicals to the new made tincture in order to make it appear old.

I am aware that some tinctures deposit when long kept. This tendency, according to my experience, is much less in a well made fluid extract, than in a tincture, the reasons for which may hereafter form the subject of another paper. But allowing this to the fullest extent, the facts still favor the use of alcohol. The precipitates are in the form of a light powder, unless starchy matters are present, and the alcoholic extract is of less density than the saccharine, and the deposit is easily diffused by shaking the extract.

climate. That he has shipped many preserves from the north to New Orleans, and always has and expects to have trouble with them on this account."

Again, it will be seen that in the passage just quoted, one of the essential directions for making a syrup so that it will keep, is to have it "perfectly transparent." In most fluid extracts this is impossible, when sugar is used as a preservative, provided the strength of the plant is retained. Quassia and those articles which yield their virtues best to cold water are exceptions; but as the greater number of plants require alcohol in percolation, so as the alcohol is lost during evaporation, the principles which alcohol extracts from precipitates which sugar does not re-dissolve, and the perfected extract is in the form of a mixture or emulsion. In general appearance and in uniformity, these saccharine extracts are inferior to those which are in the form of solution. It is difficult to mix these precipitates properly with sugar; and if once well mixed, they may again subside and form agglutinated masses.

In proof of the statement here made, many facts might be adduced, but the high authorities quoted are deemed sufficient without further argument.

The rules for the preservation and keeping of the syrups, will hardly apply to medicines, which, like fluid extracts, will owe half their value to their permanency. Many uses to which they should be adapted would be at once cut off. In field service of an army, in voyages at sea, in the pocket of a traveller, in the office of a country physician destitute of Pharmaceutical apparatus, in hospitals where a supply of medicines are kept for emergencies that may or may not arise, under all these and many other circumstances, fluid extracts preserved by sugar could not be kept with confidence.

Having thus endeavored, without quoting at all from experience, to justify my opinion that sugar is not eligible as a preservative for fluid extracts, we at once turn to alcohol as the proper agent.

Alcohol is one of the most powerful antiseptics known; it is in constant, daily use for antiseptic purposes. Its value for these purposes requires no argument in its favor, being universally acknowledged. The housewife who turns brandy upon her

the permanency of officinal syrups, we shall be able to judge of the value of sugar as a preservative agent for fluid extracts.

Prof. Procter, (Mohr & Redwood, p. 284,) says: "A solution of absolutely pure sugar undergoes no change by keeping, but medicated syrups, and even simple syrup, tend to experience alteration by age." This tendency is so well recognized, that our text books dwell upon it at length, and the best methods of preserving syrups have been made a matter of study. The United States Dispensatory says, "At best, syrups are too apt to change, and various methods have been proposed for their preservation." Every druggist is aware of the care with which syrups should be made, of the importance of ascertaining exactly the specific gravity of simple syrup, and that it is a nice point to determine the exact amount of sugar required, when vegetable juices or vegetable matter are to be preserved by it; that to have a syrup keep it should be placed where the temperature is not above 60°, and be free from contact with the atmosphere.

But even all this care does not appear to be sufficient, as we find proposed the addition of other agents to arrest this tendency in syrups; sulphate and chlorate of potassa, sugar of milk, Hoffman's anodyne, and glycerin, have all been proposed for this purpose, "but it is not always admissible to make such additions," and in practice they are rarely used. The authors of the United States Dispensatory say, "But the best plan is to make small quantities of syrups at a time," while Prof. Procter sums up the whole matter thus: "If, however, syrups are perfectly transparent, of the concentration of 35° or 36° Baumé, and are kept at the temperature of 60° F., in securely stopped bottles, they rarely undergo change before they are wanted for use in the ordinary demands of business." All pharmaceutical authorities agree upon this point, that the natural tendency of syrups is to change. Differences of temperature and change of climate affect them, a syrup that will keep at a summer temperature may crystallize in winter; and so the contrary, a syrup of the proper density for winter may ferment in summer. A gentleman largely engaged in the manufacture of articles for domestic consumption, lately remarked, "That notwithstanding all his care and experience, he finds that fruits and other articles preserved by sugar, will not keep when sent to a southern

ON SUGAR AND ALCOHOL AS PRESERVATIVES FOR FLUID EXTRACTS.

By HENRY THAYER, of Cambridge, Mass.

Two classes of fluid extracts are recognized by the United States Pharmacopœia; first, the oleo-resins, which are permanent in themselves; and second, those which require the addition of a preservative agent to render them permanent. Belonging to this latter class are five officinal fluid extracts, for preparing which the formulæ are given. The preservative agent directed by these formulas is sugar, and the extracts thus prepared are in the form of syrups. As the question is often asked, "Why should not sugar be used instead of alcohol in many non-officinal fluid extracts?" I propose briefly to state my ideas upon the subject.

I think it a self-evident fact,—I lay it down as a proposition,—that the longer a galenical preparation will keep, the greater will be its value. In preparing a fluid extract, the preliminary steps having been properly performed, that is, the extraction and concentration of the desired principles, it becomes an object, therefore, to so complete the extract as to make it available for any time and under all circumstances, that it shall not be effected by changes of temperature, by different states of the atmosphere, or by transportation to different climates, that it shall be to all intents and purposes a permanent preparation. In order to accomplish this object, it of course becomes requisite to add some antiseptic agent which shall counteract the natural tendency to undergo fermentation which exists in concentrated vegetable matter; and it seems to me obvious, that in the present state of chemical science, for economy and ease of manipulation, our choice must be between those two substances which are the foundation of officinal syrups and tinctures, and which are so largely used in Pharmacy, viz: sugar and alcohol, and that fluid extract will naturally take the form of concentrated tinctures or concentrated syrups.

As a concentrated syrup is more liable to undergo change than an officinal syrup of common strength, because it contains a greater amount of natural ferment, therefore, if we examine

to, and the processes of evaporation, distillation, crystallization, and re-crystallization, thus involving great labor, great expense, and considerable loss.

A chemical or natural union between two substances, forms a homogeneous substance, differing oftentimes in its nature and action from that possessed by the separate substances.

Now, if a menstruum be chosen, which, like alcohol and water, dissolves from a plant its medicinal principles, without exercising other chemical action than that of solution, those principles exist in the solution the same as they did in the plant; they are only dissolved; their chemical relations are not altered; but if, by the aid of different menstrua and chemical agents, the principles are separated and purified, and then re-dissolved together, the original chemical relation is not necessarily re-produced; the solution may contain different substances mixed,—not one homogeneous substance. Again, a compound substance will dissolve in a menstruum which will not hold in solution its component parts; thus, kinate of cinchona will dissolve in officinal diluted alcohol, but pure cinchona will not dissolve in that spirit.

These remarks might be indefinitely extended, but as this paper was intended to be suggestive, rather than conclusive, perhaps enough has been said. The process of isolating the proximate principles of plants, and again uniting them so as to form a representative of the original material, is not practical, and cannot be applied to many valuable remedies.

The writer's opinion may be briefly summed up as follows:—First, that while many isolated principles are uncertain in their effects, Nature's combination of principles may always be trusted; and second, that no process for procuring proximate principles in this natural state, can be used with confidence, except the officinal mode of maceration and percolation with a proper menstruum.

mined." But although no principle has been separated from rhubarb which possesses activity, the natural combination of its principles has its known and reliable effect.

It is a significant fact, that certain parties, who formerly boasted of the purity of their isolated principles, have abandoned that position, and now profess to manufacture "concentrations" containing all the principles of the plant. Thus, the article labelled "podophyllin," is not the resin of mandrake, but all the principles of mandrake combined. The theory involved in the production of concentrations is thus set forth by these manufacturers: "We would especially call attention to our method of preparing concentrated tinctures. The peculiar process consists in isolating each individual principle singly, after the manner of preparing the powders, freeing them from all non-medicinal adjuncts, and then re-dissolving them in exact proportions, in alcohol of uniform percentage."

We have, therefore, now two classes of preparations of comparatively recent date, purporting to contain, in a concentrated form, all the medicinal principles of the mother plant; first, "concentrations," and second, fluid extracts; and the difference in the mode of preparation purports to be this:—that in concentrations, the original union has been broken, and the isolated principles again united; while in manufacturing fluid extracts, this natural union is not interfered with.

Such a process as the one above set forth, to be properly performed and applied as a general rule for the production of pharmaceutical preparations, would require a knowledge of the constituents of plants, beyond that which is imparted by chemical science in its present state. The results of analysis of plants, although carefully conducted by skilful operators, are generally announced with caution, as newly discovered principles are often wanting in therapeutic power, and as those supposed to be new are sometimes proved to be either a different form of a known principle, or a product of the operation. It is evident that this process would involve a perfect knowledge of all the constituents of a plant, and of the different manipulations required to procure separately each principle. While science teaches how to procure from a plant by simple means, by the aid of a proper menstruum, its principles as a whole, it teaches only how to isolate and purify a certain number of these contained substances. To do this properly, the aid of chemical agents must be resorted

its original combination, this resin acts in a smaller dose than when isolated. Again, the effects of jalap resin are so violent and uncontrollable, that it is at present little used in general practice, while the root in substance still holds an important place in our Pharmacopœia.

The same is true of emetia, of which principle ipecac yields a small amount. The dose of this principle is larger than the amount contained in a dose of powdered ipecac, and its effects are so violent, continued, and even dangerous, that it is very little used, if used at all, while ipecac in substance, and in its galenical preparations, is in constant, daily use, and is known to be a perfectly safe remedy. The average yield of morphia from good opium is eleven per cent., the dose which is equal to one grain of good opium, is one-sixth of a grain, thus increasing the proportion one-third. The dose of quinia is larger than the amount of quinia contained in a dose of powdered calisaya bark, and the principles remaining after the separation of quinia, are extensively used in practice, under the name of "precipitated extract of bark." The authors of the United States Dispensatory, in speaking of cinchona bark, use these words: "We are not absolutely certain that the alkaloids are the only active ingredients, and even supposing them to be so, we are equally uncertain whether they may not be somewhat modified in their properties, even by the therapeutically inert principles with which they are associated. In fact, bark in substance has been repeatedly known to cure intermittents, when sulphate of quinia has failed." Prof. Mohr, in speaking of extracts, says, "Extracts are, or ought to be, composed of a number of chemical constituents or proximate vegetable principles, educed, and not produced during the process of preparation."

These remarks apply to nearly, if not all vegetable remedies. We are uncertain whether or not the therapeutically inert principles which are combined with the so-called active principles do not modify their properties. In many plants of great therapeutic value, no active principle has as yet been isolated. Thus rhubarb has been carefully examined, and a number of principles isolated, as red resin, chrysophanic acid, &c., yet Prof. Wood says, "Scarcely has the new principle been described and named before the fallacy of its claim has been deter-

nized by the United States Pharmacopœia, and when properly made, are all in their particular therapeutic power reliable and trustworthy. An unreliable tincture, instead of forming an argument against tinctures as a class, merely gives evidence of ignorance and want of skill in the manufacturer.

Every plant depends for its medicinal power upon certain chemical substances which it contains, called proximate vegetable principles; and in some instances these principles having been separated, and obtained in a state of purity, have been found to be of great value as therapeutic agents. Quinia and morphia are samples of this result of chemical science.

Scientific research has been of late years extensively applied to an examination of vegetable products, with reference to ascertaining and procuring these proximate principles, to be used as substitutes for the raw material; but while many ultimate principles have been discovered and isolated, their value as therapeutic agents does not seem to have equalled expectation.

These proximate principles do not exist in the original plant in the same chemical state as when isolated for use. Thus quinia does not represent the virtues of calisaya bark, nor does morphia represent the virtues of opium; and cases often arise in practice where powdered or gum opium is preferred by the practitioner to the alkaloids. Quinia as commonly used, is combined with sulphuric acid as a sulphate; but Nature's combination is with kinic and tannic acids, as a kinate or cincho-tannate. There exists, therefore, a natural combination, an original union, between the several principles of a plant, which has to be broken in order to obtain in purity any one principle.

The question now naturally arises,—Has this natural combination of the several principles of a plant any advantages, in any case, over the so-called active principles which have been separated by science? Without endeavoring to undervalue the worth of any isolated principle, let us examine the subject in a general way. And first, let us compare the dose and effects of a few well known principles with that of the raw material.

Jalap root contains about ten per cent. of resin. The dose of the powdered root is from fifteen to thirty grains, which should contain about one and a half to three grains of the resin, yet the dose of the separate resin is from four to eight grains; thus, in

tinctures be evaporated to the pillular consistence, they form true alcoholic extracts, which are more active, more definite, more uniform, and more permanent, than any that can be otherwise prepared. Or again, if they do not contain fixed oils or oleo-resins, the evaporation may be carried to dryness, and the powdered extracts form convenient, definite, and powerful agents; such indeed, as are some of the so-called "concentrated medicines" now offered to the medical profession, and approved as valuable preparations.

Indeed, preparations formed in accordance with these views, will, in many cases, be found superior to the fine crystallized chemicals which have been considered the climax of pharmaceutic skill, inasmuch as in these latter, the normal constitution of the medicine is always broken up, and new and artificial combinations formed, which do not act on the system precisely as the original organic salts as they exist in the plant; while in these alcoholic extracts, whether fluid, pillular, or powdered, the medicinal principles exist in combination with their own native acids or bases, and thus truly represent the plant in substance; and if our theory be true, will contain only those elements which are more or less medicinal, to the exclusion of the inert matter.

But I have extended my paper already, I fear, beyond its acceptable limits, and will therefore leave the above suggestions to the consideration and criticism of whom they may concern.

CONCENTRATED MEDICINES.

By Henry Thayer, of Cambridge, Mass.

Vegetable remedies are administered in various pharmaceutical forms. These forms have been devised by scientific men, to avoid the necessity of overloading the stomach with the powdered substance of the plant.

Every plant contains a bulk of inert matter more than equal to that of its medicinal principles, and to avoid administering this inert matter, we have the forms of tinctures, infusions, syrups, decoctions, and extracts. These preparations are founded upon scientific principles, have been for years recog-

ing appearance. In our proposed tinctures, on the contrary, all such principles are held in perfect and permanent solution, and they are not like the old fluid extracts, liable to change from fermentation or loss by freezing.

Such essential tinctures may be made much more perfect and definite representatives of the material from which they are prepared, than the common officinal tinctures, and may be dispensed with the greatest precision, while they are vastly superior to those old preparations, in occupying but one-eighth to one-fourth the space, and especially in their containing so small an amount of stimulant, in proportion to their medicinal power, that this ceases to be an objection to their administration. Should cases occur, which may in one out of fifty, in which the physician apprehends that the few minims contained in the prescribed dose would unfavorably affect the patient, he has only to drop the tincture on a little sugar in a tea-cup, and pour on to it a spoonful of hot water, and by the time it is well mixed and cool, all the alcohol will be dissipated, and the medicine left diffused in the sweetened water.

And here I will observe in passing, that no medicine, and especially those of an active character, should be thrown naked into the stomach in their concentrated forms. Such forms are exceedingly convenient for carrying, and for definite dispensing, and, I may add, for exhibiting to the patient as small and delicate doses; but in administering them, they should almost always be diffused in syrup, gruel, or other bland liquid. Or if in pills, they should be so combined as to render the solution in the stomach gradual and diffusive.

I may further remark, that if tinctures of the officinal strength are required, they may be instantly prepared from these concentrated solutions, by the simplest formulæ and in the greatest proportion. Or by adding them in proper quantity to warm simple syrup, beautiful medicinal syrups of any desired strength may be cheaply produced.

But it is not to the preparation of fluid extracts or concentrated tinctures only, that the law and the processes I propose are applicable. If we pour such tinctures into water, the resinoid principles will be precipitated; thus, jalapin, podophyllin, macrotin, &c., may be obtained in their purest form. If such

thing more is dissolved, and distil off the spirit from these weaker solutions, till the quantity left, when added to the former strong solution, will make up the measure proposed. If this, from inferiority of the materials used, is not of the specific gravity adopted, it may be further concentrated.

If the material to be extracted contains any essential oil or other volatile principle, this must first be drawn off and set aside, to be added at the close of the process, or to be used as part of the menstruum in the second part of the process. This is best done, not by distilling over, but by displacing downwards by the vapor or alcohol in the vapor displacement apparatus, an improvement which we now employ. But as my object now is to develop a general law and its uses, and not to give particular formulæ, I will not dwell longer on these manipulations.

In this way alcoholic solutions may be obtained of almost any desired degree of concentration, for as the solvent power of the menstruum is no longer diminished by the presence of water or foreign matters, it becomes, in regard to many substances, limited only by the consistence of the solution. In general, however, the concentration now generally adopted for the fluid extracts, in which each fluid-drachm represents the strength of 60 grains of the material, is a convenient one, and is easily attainable with almost every plant, but other standards may be adopted, as found expedient.

We believe that pharmaceutical preparations made in accordance with the above hypothesis will be found superior in most cases, to these now in use.

In all the formulæ now in use, or which I have seen recommended for fluid extracts, much of the volatile principles of the plant are dissipated in the concentration and lost; by this plan all are preserved. In those formulæ, the removal of the alcohol necessarily results in the precipitation of the resinous principles which, when such principles predominate, as in the jalap and leptandra, the amount of sugar recommended will not keep suspended, nor the addition of one-fifth or one-fourth of alcohol, as practised by later manufacturers, hold in solution. These must therefore be removed at the expense of the medicinal power of the preparation, or else give to it a turbid and disgust-

I wish it to be understood, however, that I contend for the application of this law only to those proximate principles of organic matter which are properly the products of vegetable and animal life. Among the multifarious combinations of the primary elements which are the results of the destructive decomposition of vegetable and animal matter, there may be found exceptions to this rule; some preparations may be found which are medicinal or poisonous, and yet not soluble in alcohol; but that is foreign to our present enquiry.

To prove this hypothesis affirmatively would require the enumeration of every article of the vegetable Materia Medica, with testimony to the solubility of its medicinal principle in alcohol; we can therefore only offer the negative proof of challenging the production of facts that militate against it. These we believe, if any, will be found so few that the exceptions will but establish the rule.

The importance and application of this law will be readily appreciated. The particular modes of manipulation must be left to the judgment of the pharmaceutist, and must be greatly varied, according to the nature of the substance operated on.

The general rule of operation will be this: In the first place, extract from the crude material all its soluble elements, or at least be sure that we have reached and eliminated all those medicinal principles which we seek. For this purpose we may employ water, alcohol, ether, or other agents, or these combined or in succession, as experience and pharmaceutical knowledge may indicate. Then, from this primary tincture or solution, draw off, by the still or the vacuum pan, the menstruum used, and reduce the extract to a semi-fluid or syrupy consistence, leaving as little fluid as practicable to dilute the alcohol to be used, and yet retain sufficient fluidity to allow all the particles to come fully in contact with this solvent. Next weaken this semi-fluid extract with absolute alcohol, or, at least, with that of such strength as will not dissolve the nutritive and inert principles. In doing this, use, in the first place, about two-thirds or three-fourths the quantity for the proposed volume of the finished tincture, and after sufficient agitation and digestion in this, decant or filter off the clear liquid and set it aside. Treat the remaining precipitate with repeated portions of alcohol till no-

when so obtained, the ether may be replaced by alcohol and all that is medicinal held in solution by that grand solvent.

But while alcohol is the specific solvent of all the medicinal elements of vegetation, they are most of them while in their native combinations soluble in water also; this is the most universal solvent in nature. This alone will probably extract all the virtues of jalap and podophyllum and leave little but the inert vegetable fibre. For the resinous principles of these roots, in their natural state, are held in such intimate combination with the other elements that they are dissolved out and held in solution with them. Thus the watery extracts of such roots actually contain their medicinal virtues although greatly diluted with other non-medicinal principles. But, if that native combination is once broken up or disturbed, those resinous principles separate and are not again soluble in that menstruum. When obtained, however, by this or other injudicious processes, these resinoid principles and perhaps others originally medicinal, are liable to become so changed in their original constitution by the action of heat, water and oxygen, as to be no longer soluble in alcohol, and just so far as this is the case their medicinal properties are destroyed and they become inert. Thus the medicinal value of jalapin, podophyllin, leptandrin and the other resinoids may be correctly estimated by their solubility in alcohol, for so far as they are thus insoluble they are worthless.

Many vegetables which we habitually use as wholesome esculents, contain some elements soluble in alcohol, but these when separated and concentrated will be found to be active medicines or poison. In themselves they are not nutritious but medicinal, but in the small proportions in which they are found in our food, they may, like the pepper, and ginger and cayenne, and common salt, which we use as condiments, serve as healthful stimulants to the digestive organs, and thus aid in the assimilation of those substances which are really nutritive.

I have above advocated the truth of this hypothesis as applied to vegetable substances only; but if the bone phosphate of lime, (which I believe is not soluble in alcohol), is entirely inert, as is the opinion of Prof. Wood, then I know of no exception to its application to the whole animal kingdom also.

ble and capable of sustaining animal life, are insoluble in pure alcohol, while the resins, alkaloid salts, essential oils and those fixed oils which are medicinal, are soluble in that menstruum.

It is at once objected to these views, that there are many vegetable substances from which pure alcohol will not extract the medicinal virtues; that for this purpose water, dilute alcohol, acids, ether or other agents are requisite, and are hence prescribed in our pharmaceutical formulæ. It is true that to eliminate these principles in the first place from their native combinations in the plant, such agents are necessary, not because such medicinal principles are not themselves soluble in alcohol, but because they are so enveloped in and shielded by other principles which are not soluble in that menstruum that it cannot reach them.

If we dissolve a mixture of gum acacia and muriate of morphia, and reduce the solution to dryness and a coarse powder, strong alcohol will not dissolve out the morphia from that powder; not because it is not soluble in the alcohol, but because it is protected by the insoluble gum. But, if now we re-dissolve this mass and pour the solution into a proper quantity of strong alcohol, the gum will be precipitated, and the morphia remain in solution, and may thus be recovered and isolated.

So in extracting the virtues of most plants it is necessary, or at least expedient, to use other agents besides alcohol to bring into solution all their elements, and thus disengage the principles we seek. In most cases water is necessary as one of these agents, for the purpose of dissolving the nutritive principles and expanding the vegetable fibre. In some cases the medicinal elements are found enveloped in others which are not soluble either in water or alcohol, as wax, caoutchouc, and the fatty oils. Then we require ether, benzole or camphene, for their perfect and speedy elimination, but when once freed from such shielding substances the medicinal elements are all found to be soluble in alcohol alone. When the principle sought is a fixed medicinal oil, we find ether to be used to great advantage, because it dissolves that principle to the exclusion of most others, and thus presents the medicine in a very pure and concentrated form, as in the ethereal extract of ergot, capsicum, felix mas, &c., but

ON THE SOLUBILITY OF THE MEDICINAL PRINCIPLES OF ALL ORGANIC MATTER IN ALCOHOL.

By Wm. S. Merrill, A. M.

In presenting my views on the above subject, I feel that I do it somewhat prematurely; I had not intended to bring them forward at this meeting of the Association, but to wait till I could more fully confirm them by experiment and illustrate them by samples. But learning that the subject of *Fluid Extracts* was exciting great interest throughout the medical profession, and was likely to be made a prominent subject of enquiry here; and as the laws which I hold to exist, lie at the foundation of all correct formula for making this class of preparations, I have concluded, since leaving home, to sketch out my views on this subject and present them for your consideration. I am aware that the truth of my hypothesis will be questioned, for I have yet named it to no pharmaceutist who at first gave it his assent; perhaps it will be proved false; but if true, all will admit it to be of primary importance in the science of pharmacy.

The hypothesis then, which I venture to propose, is this; that *alcohol*, in its solvent power, accurately discriminates between the *medicinal* and the *nutritive* principles of all vegetable substances, and, for the most part, of all organic matter. That, in their *normal states*, all those proximate principles of vegetation which are *medicinal* or poisonous, are soluble in pure alcohol, while all those which are *nutritive*, or capable of digestion and assimilation, are insoluble, or at most very sparingly soluble in that menstruum; and conversely, all those parts or principles of vegetables which are soluble in alcohol, are non-nutritious and incapable of sustaining animal life, and when taken into the stomach in their isolated state, more or less disturb the normal action of the animal functions; while all those parts or principles which are insoluble in that fluid, are either assimulative and nutricious, or else in consequence of the inaction of the gastric juices upon them, (as lignin, wax, caoutchouc, &c.) are inert or act only mechanically on the system. Thus, starch, gum, gluten, pectin, vegetable albumen, glucose, sugar, fixed oils, and other analogous principles, all those elements which are digesti-

are easily had, and therefore likely to find their legitimate level among the various remedies in their hands.

The searching analysis given some of this same class of articles a few years since by an esteemed member of this Association, and the imperfect manner of their preparation, has no doubt had its due influence in correcting any defect in their manufacture, at least so far as to put all who use them upon their guard in buying only such as are known to be free from any suspicion of like inefficiency. A very grave error was no doubt committed by those who put such articles upon the market with such large promises of value, when the critical examination referred to proved so many of them to be worthless.

It is most unquestionably the province, if it be not the absolute duty of this Association, to bring the light of science in the way of examination and critical analysis to bear upon remedies thus offered to community, and to make known without fear or favor the results of such examination. The medical profession who prescribe, and the community who are likely to take, have a right to demand, not that the apothecary shall know whether a proposed remedy is the best, or even whether it be a remedy at all, but that he should know that it is what it professes to be in its constituent elements; and neither the one nor the other are likely to be held as guiltless, if we suffer ourselves to sell or fill prescriptions with such articles about which we have any reason to doubt, or fail to use all diligence and circumspection in procuring the best to be had.

It is alone with this view that I have offered these remarks upon our Indigenous Materia Medica, and submit them to the Association, willing they should be weighed by the judgment of so respectable a class of disinterested witnesses, knowing that they will hold fast only that which is good.

brought to bear upon these comparatively new articles or new products from old articles.

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I learn that the assortment already numbers of solids some 60, fluids 150, resinoids 50, sugar-coated pills 140, and that their manufacture gives employment to 60 persons.

As I before remarked, touching the facts herein set forth, they are only probably a portion of the whole, showing how greatly this question of the value and preparation of articles of this class has increased within the few years past, and yet one of our New York druggists (a jobber) told me but a short time since that he was often unable to fill orders for these preparations on account of the demand being beyond the supply.

In addition to these various preparations enumerated, which necessitates the cultivation of some forty acres in dandalion, hyoscyamus, belladonna, &c., to obtain the crude material, beside what this concern imports, they prepare also in a form convenient for daily or family use. Here are some one hundred and fifty varieties of which we have an opportunity to test their value, and offer them as substitutes for the thousand and one humbugs and panaceas so extensively advertised.

In this view of the subject I do not hesitate to name them with approbation, and to say that, no doubt, in many instances they will be found valuable adjuvants at least, and in most cases far preferable to the vile nostrums and inert compounds so commonly resorted to by the community.

There are preparations of dandelion, at least three of rhubarb, two of sarsaparilla, two of wild cherry, three combinations of dandelion, one with senna, one with sarsaparilla and one with yellow dock, two of buchu, one of ipecac and senna, one of pink root and senna, besides various simple preparations, such as valerian, yellow dock, horehound, gentian, hydrangea, aqueous elix. opium, colchicum, &c. These preparations (samples of which are here for exhibition, and I suppose the test of any gentleman who entertains doubts about their value) are now offered to the profession in a form that seems likely to give them a standing and to bring them into daily use, so that whenever our medical brethren may chose to bring them into their practice, they

remedies, or new applications of remedies; and while some, perhaps not a few, for which great claims are put forth in their heralding, have sunk out of sight, by the weight of their own worthlessness and inefficiency, many more have arisen to their proper and legitimate position in the minds of the community and the estimation of the profession; and others either in their old and well known form, or in some new and more inviting shape, combining the excellence of the crude with the elegance and concentration of the new, have taken their legitimate places as curative remedies in our Materia Medica. It has occurred to me that the extent of the additions thus made to our list of medicines, especially the quantities that are annually sold, is not generally understood; and that in place of a paper upon the one article assigned me, something more general would be quite as likely to meet the approbation of the Association.

The sources of information from which I have derived the facts I shall bring to your notice, are entitled to the utmost confidence; and though they are derived from but a few in number engaged in this branch of our common business, yet the aggregate of quantity is unquestionably larger than any other, or perhaps than any two or three others so engaged. With regard to the medical men who use this class of remedies, it is not our place to enquire whether they claim to be Eclectic, Botanic or regular; it is no concern of ours. My own experience as a physician, and subsequently as a druggist, is, that they are used alike by all who seek for the best and most efficient, having due regard to other remedies promising better results. As a teacher of Materia Medica I have always told my class that I gave them all that was to be had in the lectures of Botanic schools, and such as excluded the metallic remedies, and the additional valuable and important list of this beside. I shall not attempt to give in detail all of this class, but only a few, and the quantities sold in a crude or powdered form, together with the extracts, solid and fluid, and the resinoids and proximate principles now recently brought into notice. In the proper place, I have something to say touching these resinoids and active principles and their comparative value, it being a matter of a good deal of importance that all the light that science, and especially analytical chemistry, can throw upon remedies, should be

SOME REMARKS IN REGARD TO OUR INDIGENOUS MATERIA MEDICA.

By C. B. GUTHRIE, of New York.

Some writer upon agriculture styles that man a benefactor of his race, who by scientific culture causes "a blade of grass to grow where none had grown before, or two to grow in place of the one." So may that man be called likewise a benefactor who discovers a new remedy for disease, or one more easily to be obtained, and therefore more accessible to the many. All contributions of this kind have ever been hailed with joy by the profession of medicine, especially such articles as belonged to our home productions. So anxious have that profession always been upon this point, that numerous prizes have been offered by various associations for the discovery of substitutes for foreign drugs —especially for quinine and some other of the proximate principles of great value in the treatment of disease. The fact that our medical men and community at large are always ready to test and give due value and credit to any article thus brought to their notice, is alike creditable to their intelligence and freedom from prejudice; nevertheless, disfavor is likely to be born a twin to it in the effort of some specialist to give it undue prominence, or claiming for it too great value as a specific, a quality not recognized as belonging to any article of the Materia Medica however valuable as a remedy. It is within the memory of almost every member of this Association, that the virtues of lobelia and boneset (Lobelia inflata and Eupatorium perfoliatum) were first proclaimed with such a flourish of trumpets as challenged the world to find their equals; and though the ridicule heaped upon those who supposed they had discovered new remedies, when they had in truth but discovered new applications of old ones, even if they had done that much, was well earned and deserved, yet we can not in justice refrain from giving the due need of praise to such as led the way in bringing to the notice of the profession these and such other articles of our indigenous flora as have so enriched our list of remedies and added to the pecuniary and scientific wealth of our shops. Many of this class of articles have gone through the ordinary tests of all new

Syrupus Scillæ.

This formula yields a fraction less than twenty-six fluid-ounces, which weighs three pounds three ounces.

In making the Acetum Scillæ for this preparation the writer is in the habit of carrying the percolation a little farther than is officinally directed, and using the excess of percolate to compensate the loss sustained by evaporation in making the syrup. With proper management there need be no fear of having a cloudy syrup from this addition.

Zinci Chloridum.

The writer agrees with Dr. Bache, (see U. S. Dispensatory, 11th ed. p. 1351,) that the fused chloride is by far the most eligible preparation, for many reasons. First, it is a matter of some difficulty to dry the salt as directed in the Pharmacopœia, since a portion of it is very liable to fuse before other portions are dry. Again, after fusion it is much more easily managed, collected and preserved without material deliquescence; and finally, it is far more easily applied to the ordinary purposes for which it is used, and occupies much less space. The fusion is easily effected in the evaporating basin in which the solution has been concentrated, and requires only a gas or lamp flame to effect it. With proper care, therefore, it becomes quite useless to transfer it to a crucible.

Should the chloride become colored from the organic matter of filters, from dust or other like causes, as it is very liable to do during the rather tedious evaporation, a few drops of nitric acid stirred into the fusing salt clears it at once, by converting all the carbonaceous matters into carbonic acid, which latter, of course, flies off with the excess of nitric acid.

The writer has never used the officinal process for this preparation, having at first given a preference, upon theoretical grounds, to that wherein the iron is precipitated by freshly prepared oxide of zinc and chlorine, and from having been well satisfied with the results obtained.

well and of uniform composition, is avoided if the result be controlled and determined by a given weight and measure. Not the slightest difficulty has occurred to the writer in making syrups upon any scale since this method has been adopted, whilst in point of simplicity and convenience much is gained.

The writer would therefore modify the officinal formula for syrup, as follows:

Take of Sugar,	two pounds and a half.
Water,	a pint.

Dissolve the sugar in the water at a boiling heat, remove any scum that may arise, and strain the syrup while hot. Then pour hot water through the strainer till the syrup weighs forty-four ounces and six drachms.* The syrup when cold should measure thirty-six fluid ounces.

The forty-four ounces and six drachms is the weight of the materials at the commencement of the process, and if this weight be maintained, or the loss compensated in the result, the manipulation is easy, and a faultless syrup is obtained.

Syrupus Acidi Citrici.

The yield of the officinal formula, measuring two pints, should weigh forty ounces.

Syrupus Ipecacuanhæ.

The yield of the officinal formula should measure thirty-six fluid-ounces, and weigh forty-four ounces.

Syrupus Rhei.

The yield of this formula is two pints, or very nearly thirty-six and a half ounces.

Syrupus Rhei Aromaticus.

The yield of this formula is seven pints, or eleven pounds one ounce.

Syrupus Sarsaparillæ Compositus.

The officinal formula, well managed, yields a little more than a gallon of syrup, of s. g. 1.315, weighing thirteen pounds two ounces.

*Here, as in other instances, it might be well to omit small fractions in favor of the nearest unit, when it can be done authoritatively, as in the Pharmacopœia.

the same time hastens the process, by performing the part of a syphon to carry off the water from the surface. Five times washing is usually sufficient, twice in each twenty-four hours.

The evaporation should be conducted in a tared basin, and this part of the process is greatly facilitated by adding only the honey at first, then evaporating for an hour or more, gently, with constant stirring, before the addition of the sugar. This not only shortens the time of the heating, but preserves the sugar from the changes produced by long heating. The evaporation should be continued till the mass weighs eight ounces.

When carefully made, from good materials, this preparation is not of a black color, as generally described and met with, but of a dark grey, or dark ash color, with an olive tint. If the preparation be hard, with a tendency to break, like molasses candy, this arises from over-heating,, or too long heating of the sugar; that is, from too slow an evaporation, or too little stirring. In using a formula of thirty-four times the quantities of the officinal one, the writer generally accomplishes the evaporation in eight hours, in a steam bath.

Liquor Plumbi Subacetatis.

In the preparation of this solution, the pharmaceutist should have a special regard to the quality of the litharge used. Upon several occasions, in the writer's practice, it has been found to consist largely of carbonate of lead and sulphate of lime; and upon one occasion, very recently, the litharge, supplied by a most respectable house, was found to contain only about 37.3 per cent. of oxide of lead. If the oxide be deficient, the preparation will of course be imperfect, and comparatively worthless. With the officinal proportions, all the litharge should disappear, so that the filter only separates accidental impurities. A greenish or bluish tinge in the preparation indicates the presence of copper in the litharge.

The officinal formula is very simple and convenient, and yields four and a half pints, or seven pounds of the solution.

Syrupus.

Much difficulty that is often experienced in making this simple preparation, and indeed, in making all syrups to keep

stances the portion examined was from the powder resulting from the careful drying and powdering of half a case; while in all the remainder, the samples were selected with care from various lumps, whenever such selection was possible. Several other examinations were made where no selection was possible, but the results were all below those now to be given. In no instance of these examinations did the yield of crude morphia exceed 8.1 per cent., whilst the average of the specimens was scarcely above 7.6 per cent. If this may be taken as expressing the condition of the general market for this drug, the common statement of authoritative writers, that good opium contains from ten to twelve per cent. of morphia, now needs re-examination and revision.

The relative expense of opium and salts of morphia taken in connection with the troublesome and expensive process of extraction and manufacture leads to the inference that manufacturers, to be able to sell the preparation at fair profits, must obtain much greater yields than would be indicated by the examination of any opium the writer has ever met with.

Pilulæ Ferri Carbonatis.

There is one point in connection with this preparation that is of sufficient importance to be suggested as an improvement to our excellent officinal formula; and that is, that the washing be performed with recently boiled water that has cooled in a covered vessel. This improves the chemical composition and color of the preparation more than would be at first supposed. But when it is remembered that if the manipulation be conducted properly as directed, in a full vessel, the air in the washing water is the only source of oxidation. It is also proper, with any ordinary materials, to strain or filter the solutions before mixing them, and as this is sometimes a slow process, the writer adds all the sugar directed for the two solutions to the sulphate of iron solution, to protect it during filtration. Upon the large scale, it is more convenient and economical to dissolve sugar in the boiling water, instead of syrup, as the impurities of the sugar settle during the cooling, and may be thus easily avoided. In draining the carbonate after washing, it is well to cover the surface with a wet cloth, as this protects it from the air, and at

cipitate only occurs, the preparation may be safely dispensed. But if a black precipitate be thrown down in any notable quantity, the preparation should be unequivocally rejected, since it will most surely prove to be harsh, irritant, and very hurtful in the class of cases in which the preparation is most frequently used.

Morphiæ Sulphas.

Upon a comparison of the medicinal activity of this preparation as made by the officinal formula, and as found in the market from the largest manufacturers, it becomes evident that a much larger dose of the latter is required to produce similar effects. This same deficiency in the commercial preparation is indicated by the circumstance that of late years very much larger doses are commonly prescribed. The dose indicated by authoritative works on therapeutics is one-sixth to one-third of a grain, this being medicinally equivalent to one and two grains of opium. But whilst opium itself has been reduced in medicinal value by the various new expedients, such as yolks of eggs, &c., till the effective dose has been very materially augmented, sulphate of morphia is now rarely prescribed in less than quarter grain doses, often in doses of three quarters of a grain, and sometimes in one grain doses, to obtain its legitimate sedative effect; and this exclusive of those cases wherein, from habitual use or idiosyncrasy, large quantities are required. There must be some reason for this, and the subject is referred to in order to suggest investigation and research. The author having made no research, must rest satisfied with stating the fact, upon his own and his professional friends' observation, that the preparation of the Pharmacopœia is more active than that of commerce; and farther, that he believes that the deficiency of the latter in effective value is not due to fraudulent admixture or adulteration, but to faulty manipulation, whereby a portion of soluble but inert, and for the most part uncrystallizable matter, is entangled in the crystals with the mother liquors, and dried and sold with them, thus increasing the percentage yield. Within the past seven years the writer has examined some twelve samples of opium, ten of which were purchased for the army and navy, where profits were not at stake, and price a secondary object. In four in-

Hydrargyrum cum Creta.

In the Amer. Jour. Pharm., 3d series, Vol. V., No. 5. the writer published an article upon this preparation. In referring to this paper for all the information upon the subject in the writer's possession, he now finds it necessary to qualify and amend the statements made in two important points. First, he has since found that upon any scale beyond a very small one, and with ordinary chalk, it is impossible to make the preparation properly by the method of shaking in the bottle, as there recommended. The trituration of a pestle or its mechanical equivalent seems to be indispensable upon a practical scale. Secondly, the writer has since found that the failure to detect peroxide of mercury was sometimes attributable to an imperfection in the method of testing, since ammonia does not throw down white precipitate from dilute solution of chloride of mercury in the presence of chlorides of ammonium and calcium. The revised or amended tests for this preparation are as follows; and although not so simple as would be desirable, they are yet easily applied, and are now believed to be sufficiently discriminative.

A small portion of the preparation is treated with acetic acid in excess, by digestion and stirring. The residue should consist of metallic mercury alone, in globules not visible to the naked eye, but easily seen by means of a lens. This residue when washed and dried should weigh three-eighths of the whole quantity treated. The acetic acid solution contains the lime, and any oxides of mercury that were present in the form of acetates. The addition of an excess of hydrochloric acid then converts the acetates of mercury into corresponding chlorides, when the subchloride being insoluble is precipitated at once. Few specimens of mercury with chalk are entirely free from sub-oxide of mercury, but the quanity should not exceed that which gives with the hydrochloric acid a mere cloudy opalescence without immediate precipitation. The solution separated from the scanty precipitate by filtration still contains the chloride of mercury (perchloride) in solution with excess of hydrochloric acid. Sulphuretted hydrogen is then passed into the solution. If the solution assumes a brown color, or if a scanty dirty yellow pre-

it necessarily contains the insoluble impurities of the materials; an objection of but little practical weight, since it has never been urged in the case of the green iodide, though that is given in much larger doses.

Take of	Mercury,	one ounce.
	Iodine,	ten drachms.
	Alcohol,	four fluid-ounces.

Introduce the mercury, iodine, and half the alcohol into a four-ounce vial, and shake the mixture occasionally during two days, or until the combination is effected. Should the alcohol become colorless during the process, iodine in minute portions should be added until the alcohol retains a brown color after shaking and digestion. Transfer the contents of the bottle to a paper filter, and when the colored alcohol has drained off wash the iodide with the remainder of the alcohol, and dry it by a gentle heat. The yield is ten hundred and sixty-two grains.

It is thought that the simplicity and convenience of this formula adapt it better to the practice of the pharmaceutist than any yet tried, whilst it yields a preparation not inferior to that of the officinal formula.

Hyarargyri Oxidum Rubrum.

No ordinary formula on the scale of the Pharmacopœia will yield this preparation of the color and appearance which it has as commonly met with in commerce, but all yield it of a character quite unobjectionable for medical use, so that the commercial appearance must be regarded as unnecessary to the efficient character of the preparation.

It adds but little to the trouble of the officinal formula to triturate the dry mass of nitrate of mercury with an additional quantity of mercury before heating it, whilst beside adding greatly to the economy of the process, it renders it more easy of management by diminishing the tendency to sublime out a subnitrate of mercury.

Six pounds of mercury to three pounds of nitric acid is the proportion used. Half the mercury is dissolved in the acid, and the salt *nearly* dried. The remainder of the mercury is then incorporated by a trituration of half an hour to an hour, and the mixture then heated.

tallic mercury that it would but slightly amalgamate a surface of gold foil when rubbed upon it, but has never seen a specimen, however carefully made, or by whatever process, that would not very sensibly affect the gold when rubbed upon it; whilst two specimens made as far as practicable in the same manner, would affect the gold differently. The proportion of yellow iodide must of course vary with the proportion of metallic mercury, and thus the color of the preparation, as commonly met with, is almost always different. It is generally described as being green or yellowish green, but when well washed it is, though of varying tint, always of a greenish yellow color; the brighter and more lively in color the better, provided it be thoroughly dry. That which has a dead color, approaching to a dull olive, always contains largely of metallic mercury, and iodides that have been subjected to the action of light and moisture.

The preparation should never be dispensed without the most careful testing, and it is fortunate that this testing is very simply and easily performed. A small quantity of iodine of mercury rubbed in a mortar with a little strong alcohol, if it contains any red iodine, will invariably exhibit a red coloration in the track of the pestle as the alcohol evaporates from the surface of the mortar. Or, if a portion to be examined be shaken in a test tube with alcohol, and the alcohol evaporated from a porcelain or glass surface, the most minute proportion of red iodine becomes visible. If it be desired to estimate the quantity,—or rather to establish the presence of metallic mercury,—the iodide should be rubbed with a moderate degree of pressure upon any surface of gold.

In concluding the unsatisfactory notice of this preparation, the writer submits the opinion that, unless some discriminating solvent can be found for the separation of these lower iodides of mercury, they are not adapted to medical use.

Hydrargyri Iodidum Rubrum.

Some years ago Dublanc proposed to prepare this iodide by a process of direct combination through the intervention of alcohol, and the writer has found a slight modification of M. Dublanc's process much more easy, convenient, and economical han the officinal one, while it is only liable to the objection that

Another new preparation of iron deserving of attention and study in the professions of medicine and pharmacy, as a pure tonic astringent and hæmostatic, is that proposed by M. Monsel, and published in the Journal de Pharmacie et de Chimie, for Sept. 1857, p. 208. In composition it consists of five equivalents of sulphuric acid with two equivalents of sesquioxide of iron. It is, to all useful extent, free from acidity and causticity, and its astringency and powers of consolidating and constringing tissues are superior to any thing hitherto met with by the writer. When dried it has the appearance and sensible properties of tannic acid, but is very deliquescent. In solution it has the appearance of the ordinary solution of tersulphate of sesquioxide of iron, but is without the corrosive properties and acidity of the latter solution.

Lactate and valerianate of iron are also coming into use, but with what claims beside that of increasing demand, the writer does not know.

Hydrargyri Iodidum.

In a chemical point of view, this preparation may be regarded as one of the most indefinite and uncertain of the Materia Medica; whilst therapeutically it is certainly very far from being what is desired. From being mild and manageable at times, it varies so that harsh and even violent effects are not unfrequently encountered from its use. As prepared strictly in accordance with the Pharmacopœia, it always contains the red iodide, and this in various proportions, according to slight variations in the management. So that it must have been an oversight in those who constructed the present formula, that a careful washing with strong alcohol was omitted. When made by the officinal formula, in the dark, or by artificial light, carefully and thoroughly washed by digestion and decantation with strong alcohol, dried in the dark, and then carefully preserved from the light, it is probably in its best condition for therapeutic application. But even then, though free from red iodide it contains a large preportion of the yellow or subiodide, and of metallic mercury. And these proportions vary, probably, every time it is made, even though made by the same person from the same materials. The writer has occasionally seen it so free from me-

To two fluid-ounces of water, in a twenty-four ounce beaker or capsule, add the sulphuric acid, and heat the mixture in a water bath. Then add successively, the nitric acid and sulphate of iron, and heat the whole, with occasional stirring, for half an hour. Dilute the solution with four fluid-ounces of water, and filter it into a precipitating vessel of two gallons, capacity, washing the filter through with water. Dilute the filtered solution to two and a half pints, and then add the solution of ammonia in small portions, with constant stirring. Fill up the vessel with water, stir again thoroughly, and then allow the oxide to settle. Wash the precipitate six times by decantation, or till the washings give no cloudiness with solution of chloride barium, and keep the magma in close bottles, with water sufficient to cover it.

The drained magma weighs seventeen ounces. Dried without heat it yields 696 grains of terhydrated sesquioxide of iron, or dried and ignited it yields 536 grains of anhydrous sesquioxide of iron.

For explanation of the steps of the process, and other details, the writer avoids repetition by referring to the before mentioned paper of Prof. Procter, and to a paper by the writer, in the same Journal, Vol. III., No. 4, p. 292, et seq.

Ferri Pulvis.

When iron by hydrogen is of a light, spongy texture, of a clear, grey color, and entirely soluble in a mixture of one part sulphuric acid to sixty parts of water, without giving an odor of sulphuretted hydrogen, it may be considered a perfectly good preparation. It is not unusual, however, for the best specimens to leave a very minute proportion of residue, (black oxide of iron,) not soluble in an acid so dilute.

Ferri Subcarbonas.

The yield of the officinal process for this preparation is two and a half ounces and sixty-eight grains ; or of the oxide after ignition, two ounces and one hundred and thirty-three grains.

The writer suggests that Ferri et Ammonia Sulphas, or the so-called ammonio-ferric alum, be admitted to the Pharmacopœia as a valuable addition to the preparations of iron.

be easily obtained, in which the beginnings of evil have been successfully opposed.

The writer is disposed to resume or re-incorporate the direction to preserve this preparation from the light, since by long exsure to light it loses its fine pale-green color and becomes colorless, with probably a material change of composition, and possibly of medicinal effect. Indeed, as a general rule, medicinal substances should be excluded from light to a far greater degree than at present obtains in practice; and it would be an important step in the right direction, to have some of the white painted shelves of dispensing establishments replaced by closets. Concentrated ether, exposed to sunlight for an hour of each day, soon acquires a strong, disagreeable, pungent, and often empyreumatic odor, becomes acid, and altogether unfit for use, through partial decomposition. Chloroform under similar circumstances, gives an odor of chlorine and muriatic acid, and produces a yellow, oily liquid, which collects around the edges of the surface in contact with the bottle. Spirit of nitre becomes colorless and acid in a few hours. Hoffmann's anodyne becomes quite acid, and many tinctures and powders change their sensible properties materially.

Ferri Oxidum Hydratum.

In the Amer. Journ. Pharm. 3d Series, Vol. I. No. 2, Professor Procter gives a most convenient formula and directions for making this preparation, which, with slight modification, the writer has since followed as being better than the officinal process for many reasons, but chiefly because it saves time, labor, and apparatus, and produces a more concentrated solution of the tersulphate of the sesquioxide of iron, better adapted to keeping on hand. The modified formula, now used with great convenience and success, reduced to the scale of the Pharmacopœia, is as follows:

Take of Sulphate of Iron,	four ounces.
Sulphuric Acid,	five and a half drachms.
Nitric Acid,	four drachms.
Solution of Ammonia,	seventeen fluid-drachms.
Water,	six fluid-ounces, or a sufficient quantity.

made by the cheaper formula of the foreign Pharmacopœia, and contains only about five grains of the iodide in each fluid-drachm, with a larger proportion of sugar. This larger proportion of sugar is inconvenient and unnecessary, since with proper ordinary precautions the product of our officinal formula is not liable to deterioration. The writer deprecates the too common practice of making this preparation rather carelessly, and then setting it in the sun light to improve the color and appearance, since, Mr. Maisch has shown that this treatment probably produces an iodate of the sesquioxide of iron.

From the facility with which chemical reactions take place in spongy or porous textures, whose pores contain air or gases often in a condensed state, the writer was easily led to a theoretical objection to filtering the hot solution of iodide of iron into the sugar, as in the officinal process; and he has since regarded the circumstance of the color of this preparation being better when the solution is filtered into syrup, from which the air has been expelled by the heat in making it, as confirmation of the fact that there is far less air contact and far less consequent decomposition when the syrup is made beforehand.

When solutions of chloride, iodide or bromide of iron, with the chlorine, iodine or bromine, in minimum combining proportions, are brought in contact with organic matter, a portion of the haloid salt is always decomposed with separation of sesquioxide of iron. The extent of the decomposition is determined chiefly by the presence of oxygen or air, but also by the extent of the contact, by the dilution of the solution, and by the temperature of the reacting substances. Hence the writer would have as small a quantity of solution to filter as possible,—would filter this through as small a filter as possible,—would filter it cold, or cool, and with the least possible exposure to the air,—and would abstain from washing the last portions out of the filter. This last portion, if washed through, is always of a brown color, and if washed through with water containing the usual proportion of air, is very brown.

Fortunately, the solution, when not embarrassed by the debris of a large excess of iron passes through a filter very readily, and very rapidly; so that by ordinary care and precaution, a very perfect, and so to speak, a very chemical preparation may

ence, and produces a preparation of which those present can judge in some measure by the specimens of various ages presented. A specimen made exactly in accordance with the officinal directions is also presented for comparison. Before travelling with it, it was bright and clear enough, but had a sediment at the bottom from which the others are free, and its color is not so good, probably for reasons to be noticed farther on. These specimens have not been exposed to the light.

Take of	Iodine	two ounces.
	Iron Wire	five drachms.
	Distilled Water,	a sufficient quantity.
	Sugar	twelve ounces.

Dissolve the sugar, by means of heat, in eight fluid-ounces of boiling distilled water, and filter the syrup through paper into a tared flask of the capacity of twenty fluid-ounces or more. Then put the iodine and iron into a bottle with three fluid-ounces of distilled water, and after the active reaction has subsided, shake the bottle vigorously until a bright clear green solution, free from brown tint, is obtained. By this time the solution of the sugar will nearly all have passed through the filter. Perforate the syrup filter over the bottle containing the solution of iodide of iron, and allow the remaining unfiltered portion of the syrup to run into the solution of the iodide, and shake the mixture well. Arrange a funnel, containing a small moistened paper filter, over the flask of filtered syrup, so that the point of the funnel enters the syrup, and then filter the solution of the iodide into the syrup, keeping but a small portion of the solution in the filter, and maintaining a constant level till all has been poured in. Allow the filter to drain, without rinsing it, and finally add distilled water to the preparation till it measures, if cool, twenty fluid-ounces, or till it weighs twenty-five and a quarter ounces, shake it well, and keep it in small bottles well filled and well stopped. The process requires three hours, and yields a bright pale green solution of a s. g. of 1.348 containing a little over seven grains of iodide of iron in each fluid-drachm.

This preparation, in the few instances in which the writer has seen it in the wholesale market, has been colorless or very nearly so, or of a brown tint, and of the consistence of syrup. He therefore judges that in the wholesale market it is commonly

resulting decomposition would more than counterbalance any advantage sought in this direction.

As sesquioxide of iron forms no combination with iodine, it might be supposed that rusty wire or filings would be as good as clean iron, and for some time the writer acted upon this supposition. Afterwards, however, he became convinced that clean iron is necessary for a good preparation.

Since it has been pretty conclusively shown that the presence of metallic iron does not prevent the separation of sesquioxide, but only serves to recombine the iodine of the original compound, it seems desirable rather to avoid the decomposition that occurs from contact of the air, than to have iron present during the evaporation. In operating on a larger scale the writer, therefore, performs the filtration, and finishes the evaporation in an atmosphere of carbonic acid, and is thus enabled to dry the preparation rather more thoroughly by means of a saline bath, procuring a nicer as well as a practically better result. The drying is then continued till the iodide weighs about the sum of its constituents. Without any positive knowledge from experiment upon the subject, the writer thinks that the decomposition is always the greater, the farther the drying is carried.

Liquor Ferri Iodidi.

Here, again the writer suggests that the very large excess of iron be reduced, as in the foregoing formula. When the combination is so rapid, easy and complete, as between these two elements, it is quite useless to have so great an excess of iron.

Another objection to the officinal process for this preparation is, that in filtering the solution of the iodide into the sugar, and then shaking them till the sugar is dissolved, a bright clear solution is rarely obtained. This arises from the circumstance that almost all sugar contains particles of dust and insoluble matters, and from the practical fact that it is almost impossible to make a bright syrup without a boiling temperature, or a most tedious filtration. Almost all sugar within ordinary reach contains something that renders cold-made syrups more or less cloudy and very difficult to filter.

In view of these circumstances the writer suggests the following formula. It has now stood the test of three years experi-

beneath, and boil the solution. When the solution has all passed the filter, and the filter has been washed by the water condensed from the boiling solution, remove the funnel and filter, and introduce a long piece of clean iron wire. Boil actively till the iodide begins to thicken, and then gradually reduce the flame, and continue the heating gently till iodine vapor appears in the remaining portions of watery vapors passing off. Then extinguish the flame, and allow the flask to stand loosely stopped for half an hour to cool. Finally, break the flask over a warm dry mortar, carefully excluding the fragments of glass, break up the iodide and transfer it to small bottles with good stoppers. The net yield is 1212 grains.

Some of the advantages obtained by this management are as follows: By using so much less iron, though still a sufficient excess, the violence of the first reaction is controlled, the stirring avoided, and by the use of a bottle the air is excluded, and the loss of iodine diminished. By the use of a smaller proportion of water the filtration and evaporation are materially shortened and smaller vessels are required. By affecting the combination without artificial heat, less risk is involved, while the operation is equally simple and easy, and more convenient. After the first active reaction subsides, the stopper may be firmly fixed, and then five or ten minutes shaking produces the characteristic clear green color, while the bottle remains entirely free from the brown stains that mark the commencement of decomposition. By filtering into the flask in the manner described, the whole solution in the flask and filter is protected during the greater part of the time by an atmosphere of steam, and the filter is washed and drained in the same atmosphere by the water condensed in and upon it, this water with the iodide falling back into the flask. The long iron wire stuck into the flask after the funnel is removed serves mainly to render the boiling equable, and prevent bumping.

The finished preparation is in bright, dry, metallic looking masses, somewhat crystalline in fracture, and wholly soluble in water. It still contains a little water that might be driven off by more protracted and more gentle heating; but as the remainder of the process would involve protracted contact of air, the

mula and thoroughly exhausted, the resulting extract is far too thick for convenient use. On a late occasion the writer found it, when cold, so thick that it could scarcely be poured at all.

The officinal percolate should be evaporated to 5 ℥ ℨ ʒ, which is equivalent to 5 f.℥ as directed, and the yield of finished extract is very nearly $8\frac{5}{8}$ f.℥ or 10 ℥ 6ʒ 24 grs.

Extractum Valerianæ Fluidum.

The first, or ethereal, percolate, in making this preparation, is directed to be evaporated to 5 f.ʒ, the equivalent of which by weight is 4 ʒ 177 grs. The second, or alcoholic, percolate, is directed to be evaporated to 10 f.ʒ, and the equivalent of this by weight is 9 ʒ. The one pint of finished extract weighs 1 lb. $2\frac{3}{4}$ ℥ troy, or 1 lb. 1 dr. avoirdupois.

Ferri Chloridi Tinctura.

In the Amer. Journ. Pharm., 3d series, Vol. V., No. 4., the writer has given what he considers to be an improved formula for this preparation with some remarks upon its composition, and the common want of uniformity in it as usually met with.

Ferri Iodidum.

In the management of this preparation, the writer greatly prefers a modification of the process of Messrs. Smith, of Edinburgh, as given in the U. S. Dispensatory. This process as now used by the writer, reduced to the scale of the Pharmacopœia, is as follows:

Take of Iodine,	two ounces.
Iron Wire,	five drachms.
Distilled Water,	three fluid-ounces.

To the iodine and water, contained in a glass-stoppered bottle of eight ounces capacity, add the iron, and shake the mixture till it has assumed a purely green color, free from brown tinge. Then having placed a flask of proper capacity over a spirit lamp, or gas-burner which is just ready for lighting, filter the solution through a moistened filter into the flask, allowing the funnel which holds the filter to rest upon the rim of the flask neck. As soon as the filtration has commenced, light the flame

protected by a stratum of froth and vapor, whilst the time of heating and exposure is thus shortened to a minimum.

The yield of extract in the writer's practice is 23.25 per cent. of the dry gentian used.

The extract should be brown, not black, transparent, and of a strong, pleasant, aromatic odor.

Extractum Cubebæ Fluidum.

The yield of this oleo-resinous extract in one well conducted operation, with an fair average quality of the drug, was 27 per cent. of the powder used, or 26 per cent. of the crude drug; or by measure, 8 f.℥ 5½ f.℥ from the troy pound, or 4 f.℥ 1½ f.℥ from the pound avoirdupois.

The writer would suggest that the Fluid Extract of Ergot, as made by Prof. Procter's excellent formula and process, published in the Am. Jour. Pharm., 3d series, Vol. V. No. 6, be admitted to the Pharmacopœia.

Extractum Sennæ Fluidum.

In using this formula and the next succeeding one, the writer thinks the quantity of menstruum directed to be used to moisten the powders, is insufficient to secure the object of the short maceration, and he now uses one-fifth more with supposed advantage. The percolate is directed to be evaporated to 20 f.℥, but it is more convenient to to evaporate it the equivalent weight which is 22℥. The yield of the officinal formula is 26½ f.℥, or 31℥. 3½℥.

Extractum Spigeliæ et Sennæ Fluidum.

The percolate is here directed to be evaporated to one pint, but is more conveniently evaporated to the corresponding weight of 17 ℥ 1 ℥.

The finished extract measures 28½ f.℥ and weighs 35½ ℥.

The odor, and other properties, given to this preparation by the carbonate of potassa render it, in the writer's opinion, extremely disagreeable and inelegant, and it is suggested that a better formula might be found.

Extractum Rhei Fluidum.

When a very good specimen of rhubarb is treated by this for-

With the materials directed by the officinal formula, at the lowest importing prices this extract will cost the pharmaceutist a little more than two dollars per pound, without including apparatus, time, labor, or skill, or any other element than the mere prime cost of materials; and yet the writer has watched the prices current quotations for a long time past without having seen it quoted above $1.80. Many manufacturers are said to admit that they substitute extract of jalap or extract of podophyllum for the scammony, whilst some probably leave the scammony out without substitution. In view of these circumstances, the writer would go farther than Dr. Wood, (see U. S. Dispensatory, 11th ed. p. 1028,) and say that *all* the extract of the common market must be looked upon with suspicion. That all high priced extract, however, may be received without suspicion is by no means the case, since the writer has met with more than one instance wherein pharmaceutists, who had acquired a reputation for care and nicety in purchasing for dispensing, had been charged high prices for such articles, as a guarantee of quality, whilst the same articles were sold to others at the ordinary market quotations.

The remedy for such a condition of things is clearly indicated to be, that the pharmaceutist should make for himself all those preparations that cannot be examined by tests.

Extractum Gentianæ.

This extract, and those directed to be made upon this formula as a type, are much improved by a trifling variation from the letter of the directions. Instead of heating the filtered infusion to the boiling point simply, the writer boils the infusion down to three-fourths of its original volume before attempting to strain. The separation of albuminous matters is then much more complete, and the straining far easier, while the preparation is in no degree impaired. The yield is, however, smaller just in proportion as the albuminous matter is more completely excluded. The evaporation, if conducted by active boiling, down to the consistence of a thin syrup, is, if conducted in a rather tall narrow vessel by means of a steam coil, as efficiently performed in the air as in vacuo, since it may be kept entirely

to the object in view. But this method has the serious objection of introducing a very considerable proportion of nitrate of soda into the preparation, and of diminishing its available strength by the percentage of chloride of silver, plus the percentage of nitrate of soda formed. The writer prefers to add a given quantity of hydrochloric acid to the nitrate before fusing, or while in solution; and thinks that such an addition as will give to the nitrate 5 per cent. of the chloride of silver, will be found sufficient for all useful purposes. The chloride of silver formed is entirely soluble in the concentrated solution of the nitrate, and is therefore of course perfectly disseminated through the whole quantity. So hard and tough does this admixture render the sticks of fused nitrate, that the writer believes that they might be made of two-thirds the usual thickness, and yet be sufficiently strong for all practical purposes.

The formula proposed for this preparation is as follows:

Take of Nitrate of Silver,	two ounces.
Muriatic Acid,	forty grains.
Distilled Water,	half a fluid ounce.

Mix the acid and distilled water in a suitable vessel, add the nitrate of silver, and by means of a sand bath or gas flame evaporate to dryness, fuse, and cast the fused mixture in suitable moulds.

The characteristics and tests for this preparation are the same as for that which contains no chloride. If the hydrochloric acid be of full officinal strength, it will contain just about 5 per cent. of chloride of silver.

The specimens presented are, first, that made by Dr. Smith containing 8 per cent. of chloride of silver added in the form of chloride of silver. And second, that made by the writer by the above formula.

Extractum Colocynthidis Compositum.

Whatever information the writer's practice with this important preparation has collected, and the suggestions arising therefrom, may be found in a paper upon the subject, published in the Am. Jour. Pharm., 3d series, Vol. V. No. 2.

The net yield from the officinal formula is 25 ounces and 31 grains troy, or 1 lb. 11½ ounces avoirdupois, when managed in the best manner.

with lead pencil. But the sticks carry with them, on being dispensed and used, no indication of adulteration, and since "the trade" or the initiated only, know the slight distinctions mentioned, the preparation is liable to be sold and used as a pure article. Whatever may be the object of this half-masked adulteration, its effect and drift are unmistakably bad, and therefore the means of detection and control should be so simple and easy of application, as to insure their use as far as practicable.

The writer believes he has been fortunate enough to find a test just applicable to this necessity, and which in point of simplicity, and easy application, must leave little to be desired. A small fragment of nitrate of silver, crushed to powder with a knife blade upon a piece of paper, the powder spread out over the paper, and the paper and powder then rolled up into a small match-like roll, twisted, set on fire and burned, leaves a tasteless residue of pure silver. But if the nitrate contains even one per cent. of any saline impurity, the residue, instead of being tasteless, will have the sharp alkaline taste of the base of the adulterating salt. The little match burns rapidly with deflagration, as may be seen by those near, the carbon of the paper serving perfectly to reduce the silver, and in great measure the base of the adulterating salt also. With this test no one need be deceived by "No. 2" lunar caustic, nor by the adulteration of the crystallized nitrate with chlorate of potassa, &c., and even the small proportion of sal prunelle that is often added to the so-called pure or "No. 1 caustic" to make it run well, is detected in a minute with equal certainty.

A solution of nitrate of silver precipitated by hydrochloric acid in excess yields a precipitate entirely soluble in ammonia. The clear supernatant liquid evaporated to dryness yields no residue whatever.

It has been ascertained by Prof. J. Lawrence Smith, of Louisville, Ky., that the addition of a small proportion of chloride of silver to the nitrate renders the sticks very tough and hard, and thus remedies a defect long felt in the use of pure lunar caustic.

He adds, before fusing, such a proportion of chloride of sodium that the fused nitrate may contain about 8 per cent. of chloride of silver, and considers this proportion as best adapted

.900 be substituted, and the quantities of tincture of camphor and spirit of rosemary be reduced one half, the ammoniacal strength of the mixture would be within .4 of one per cent. of that of the original formula of Dr. Granville. Under the present condition of the market in this preparation it is very doubtful whether the lotion or liniment ever attains to this strength, since it is rare to find Stronger Solution of Ammonia that is sufficiently strong to hold the camphor of the tincture in solution, and this is the criterion of strength too commonly adopted, while the slow vesicating property of the mixture is ascribed to idiosyncrasy.

Argenti Nitras Fusus.

With regard to this preparation the writer has only to suggest that the number and simplicity of the tests be amended.

Lunar caustic when quite pure is not white, as usually described, but rather colorless and translucent at a point of recent fracture, and greyish externally from the action of light and organic matter. It is often but little more opaque than the crystals of similar thickness. It is crystalline and radiating from the center, upon fracture, and sometimes a little grey internally from a small proportion of reduced silver. When of granular or homogeneous fine grained fracture, and when of an opaque or porcelanic whiteness, it may be strongly suspected of impurity. As a general rule, that presenting the handsomest appearance is most to be distrusted, or most clearly indicates the necessity of examination. It is, perhaps, better known in the pharmaceutical than in the medical profession, that a lunar caustic "No. 2" is very commonly made and sold, and is, as far as the writer has been able to ascertain, quoted upon the prices current of every manufacturing chemist in the United States. This preparation is commonly made up of 66 to 75 per cent. of nitrate of silver, and 33 to 25 per cent. of nitrate of potassa. It is put up precisely as the so-called pure or "No. 1" preparation, with the exception of a shade of color in the tint of the paper with which it is wrapped, or in the wax with which it is sealed. The bottle containing half a pound or more is often marked "No. 2" upon the wrapper or label, and this sometimes

amount of water distilled with the gas is not embarrassing. The writer's practice with this preparation has been with twelve times the quantities of the officinal formula, and upon such a scale the comparison of both manipulation and results, of many repetitions of both processes, is beyond question in favor of the latter, or wet process.

It is a very convenient practice with this process to follow the Edinburgh method of embracing the preparation of Liquor Ammonia Fortior in it, since it only requires a proper subdivision of the distilled water between two bottles, to obtain a saturated solution in the first one, at any desired temperature. In view of this circumstance the writer would suggest that Liquor Ammonia Fortior be transferred from the Materia Medica list, and embraced in this formula, and again that the required s. g. of the stronger solution be increased from .882 to .890. This is suggested because the stronger solution is never used in medicine or surgery undiluted, but has its strength prescribed merely to correspond to the empirical formula of Dr. Granville, wherein it is reduced in strength by the tincture of camphor and spirit of rosemary of the lotion without acquiring any medicinal advantage from the admixture. When of a s. g. of .890 or even .9, it would far exceed Granville's Lotion in ammoniacal strength, and would be sufficiently strong for the other empirical formula of Gondret. A cogent reason for such a change of strength is the practical difficulty of preserving a solution of a s. g. of .882. A peculiar bottle and stopper are indispensable, and even with these, some of the bottles of a stock are pretty surely lost whenever the temperature of the locality becomes elevated even within natural limits.

This difficulty of preservation is probably the chief reason why the stronger solution as ordinarily met with is so deficient in strength, being commonly found of s. g. between .9 and .915. If, therefore, the Pharmacopœia would prescribe a density of .890 the preparation might be made and kept without artificial refrigeration, while all useful purposes would be subserved. Such a solution contains 26 per cent. of ammonia, or nearly 6 per cent. more of ammonia than Granville's stronger lotion, and would only require a different scale of dilution to equalize the ammoniacal strength. Thus if solution of ammonia of a s. g. of

moniacal gas, without success, finally gave it up, and adopted what is called the wet process, with very different results. It is therefore suggested, that the following may be found a better formula and directions in view of the desired result.

Take of Muriate of Ammonia.

Lime,	each one pound.
Distilled Water	a pint.
Water	six pints.

To the lime in a suitable vessel add the water, and allow the mixture to cool. Stir the mixture well, and pour it off from the heavier sediment into a two gallon glass retort. To this add the muriate of ammonia in fragments. Place the retort in a sand bath, and adapt to it a receiver previously connected by means of a glass tube, with a quart bottle containing the distilled water. Then apply heat, to be gradually increased till ammonia ceases to be given off. Remove the liquor contained in the quart bottle, and add to it a sufficient quantity of distilled water to raise the s. g. to ·960. Keep the solution in small bottles well stopped. The yield will be one and a half pints. The liquor from the receiver should be kept and added to the next succeeding charge.

Solution of ammonia may also be prepared from the stronger solution of ammonia, &c., as at present directed by appendix to the officinal process.

Solution of ammonia is transparent, colorless, and free from empyreumatic or other foreign odor. 100 grains of it saturates 30 grains of officinal sulphuric acid. When slightly oversaturated with nitric acid it should remain colorless and transparent, and should give no precipitate with nitrate of silver or chloride of barium.

This process has, in comparison with the officinal one, the single disadvantage that it renders a retort of double size necessary. This, however, is counterbalanced by the uniform character of the product, whilst in simplicity and convenienee of manipulation, and in economy, it has material advantages, since the powdering of the materials, the troublesome and suffocating trituration of the powders together, and the loss of ammonia in the operation, are all avoided, and the process is completed more effectually at a far lower temperature, and is, throughout, under better control; whilst if terminated at the proper time, the

thus corked, so that the cost of putting up such preparations may be no greater in the small packages than in the usual objectionable manner, since the prescription vials are appropriate wherever the preparation is needed, whilst the advantage of a perfectly kept preparation will be obtained collaterally, and at no additional cost to the dispenser. It is supposed that pharmaceutists would not object to buying a few of their prescription vials thus filled with such preparations, as they would thus avoid the usual accumulation of unserviceable packing bottles.

As a surgical collodion dressing, for covering vaccine crusts, and for many other useful purposes, a more dilute solution of gutta percha is already well known.

Collodium.

In the management of this formula, a glass or porcelain cylindrical vessel that may be covered closely is safer and more convenient than a wedgewood mortar, and in the writer's experience twelve hours should be substituted for four minutes, as the time of contact between the materials. The cotton should be washed twice with boiling water finally, and then after strong pressure, that is, while still damp, is in the very best condition for solution in the ether. In the writer's hands the officinal process proved rather precarious and uncertain in result. But after the valuable paper of Mr. Mann, of St. Petersburg, republished in the Am. Jour. Pharm. 3d Series Vol. I. No. 6, the above modifications were adopted with the effect of producing a cotton of uniform solubility, which yields a consistent tough collodion film.

Liquor Ammonia.

It has of late years become almost impossible to obtain muriate or sulphate of ammonia that is free, or that may be easily freed from empyreumatic matter, since the sources from which the markets are supplied are new and chiefly collateral to other manufactures, as of illuminating gas from coal. Hence solution of ammonia made by the officinal process is invariably empyreumatic in odor, and thus far unfit for medicinal purposes. The writer after using a multiple of the formula and process for a time, with many devices for correcting and purifying the am-

tion. To any one disposed to make such an investigation, the writer will be glad to furnish the material.

The attention of the Association is directed to some specimens of very good chloroform upon the table; and those who desire it, are invited to apply the simple tests that have been described. The particular attention of the Association is also invited to the method adopted by the writer, of printing upon the label of some of the most important preparations used in medicine, a few simple discriminative tests, to serve as a reminder to those who dispense and use the preparations how simple and easy it is to estimate their medicinal value.

In the manufacture of chloroform there is a residuary portion not fit for medical use, and not easily cleansed by rectification, so that the only disposition to be made of it has been to return it to the still with the commencement of a new operation. The writer has lately attempted to utilize this in a manner not unworthy the attention of pharmaceutists. Gutta-percha, to the extent of one ounce to five fluid ounces of the chloroform, is dissolved in it, and the solution filtered through paper or not, according to the purpose in view. This makes a variety of what has been called chloropercha of the consistence of thick honey, as may be seen in the specimen presented. This liquid forms a convenient and efficient and cleanly substitute for bladder or wax, as used in capping bottles, glass-tubes, &c., but appears thus far to be more important as a covering for corks, used in securing liquids to which unprotected corks would not be applicable. By coating a cork with this liquid it has in a few moments a covering film of pure gutta percha, the chloroform entirely and speedily evaporating. This covering is adherent, flexible, and when properly applied impervious. A cork so covered, when forced into a bottle in the ordinary way, corrugates the film, but does not break it, and is thus for many purposes equal to a glass stopper. The writer presents specimens of tincture of muriate of iron, ether, spirit of ether compound, and sweet spirit of nitre, all secured by corks so covered, and put up some months since without any especial care. From the as yet limited experience with cork so protected, the writer expects to be able to offer such articles as sweet spirit of nitre to pharmaceutists, put up in four and eight ounce prescription vials

is possible. The application upon the hand, as proposed by Dr. Gregory, is much less delicate than when the evaporation takes place from bibulous paper, or a clean glass or porcelain surface. A piece of ordinary white wrapping paper, such as is to be found upon the table of every physician and pharmaceutist, is all that is required. Enough chloroform to wet the centre of a piece five or six inches in diameter, say a drachm, is poured upon the paper, and the paper is then held until it acquires a greasy rather than a wet appearance. Up to that time the odor of chloroform alone is noticable, but afterwards the impurities begin to evaporate in the order of their volatility. As most of these impurities are very volatile in all tolerably good specimens, at least when held in solution by the chloroform, it is necessary to observe closely, in order to detect some of them when present in minute proportion. Two or three different odors may often be detected momentarily, and in very faint degree, in good chloroform, but in all good chloroform the odor is very slight and not disagreeable, and is entirely gone by the time the paper is quite dry again, so that it is left odorless.

They are perhaps best observed by holding the paper over the nose and mouth, and inspiring with the mouth a little open. With a larger quantity of chloroform on a breakfast plate, as in testing Ether Fortior, the test becomes far more critical, so that by this means a medicinally pure chloroform will yield an amount of odor, though not of the more hurtful, disagreeable kind, which if found by the paper test, would cause the sample to be rejected. To a practiced manipulator with this test, the amount of alcohol even, is very usefully estimated.

In connection with this subject, the writer may exhibit to the Association a specimen of the oily impurities that are found in chloroform. As it comes crude from the apparatus used by the writer, it is, as shown by the acid test, about in the condition of the article commonly met with in the market, and yet about twelve fluid-ounces of this heterogeneous oily fluid is obtained from the rectification of each hundred pounds. It is a matter of very great interest to know the character and properties, chemical and physiological, of these impurities, even though they may be, as the writer believes they are, changed in the separa-

Chemically pure chloroform gives no color to pure, strong sulphuric acid, even after twenty-four hours' standing in contact; yet a little dust in the rectifying apparatus or vessels, in the room where it is put up, or in the bottles in which it is put, or by other accidental means, or a remaining trace of the more volatile impurities, or a slight impurity or decomposition in the small proportion of alcohol it contains, will, any of them, serve to tinge the acid of the test; and so long as this is but a tinge, it indicates the accidental character of the impurity, and does not impair the medicinal value of the chloroform, no matter whether the mere tinge of color is produced at mixing, or only after twelve hours' contact. This tint should not exceed in depth, that of the palest sherry wine; and in good chloroform, of a density of 1.496, it does not, after many weeks' standing, with frequent agitation, exceed this tint. If, after twelve hours' standing, the color approaches to that of Madeira wine, the preparation is, in the writer's opinion, not fit for use. The tints of color described may be well seen in the specimens presented.

Upon shaking good chloroform of the officinal density of 1.49, with the acid, close observation may easily detect a rise of temperature that becomes very sensible when held to the face. This is caused by a combination of the acid with the small proportion of alcohol and water present in the chloroform. In chloroform of lower density, the proportion of alcohol and rise of temperature are correspondingly greater, and more easily estimated; whilst in chloroform of s. g. 1.494, the proportion of alcohol is so small, that the rise of temperature is not perceptible to the hand or face, through so imperfect a conductor as the glass bottle. By a thermometer immersed in the liquid, before and after mixing, however, a difference of 5° or 6° is commonly perceptible. Hence, this observation of rise of temperature becomes a very good and simple practical indication of the s. g., and with a little practice is susceptible of about as much practical accuracy as an hydrometer, since hydrometers are very uncertain instruments, when three decimal figures are to be read upon them.

The odor test is quite as valuable, and more simple, since under proper management it detects, in a minute or two, all hurtful impurities, (though not the diluents,) as unerringly as

the table for examination; and among them common prescription vials, secured with corks coated with gutta percha, in a manner to be noticed hereafter.

Chloroformum.

The writer published some time since (see Amer. Jour. Pharm., 3d Series, Vol. V., No. V.,) all the information in his possession, on the subject of this preparation. He has never made chloroform on the small scale, or with the apparatus of the Pharmacopœia, and therefore can offer no useful comments upon the formula. The paragraph of properties and tests, however, he would propose to modify somewhat. First, that the s. g. be changed from 1.49 to 1.494, and the boiling point from 142° to 140°, and again that Mr. Morson's important sulphuric acid test be more definitely given, and in connection with the writer's observation of the temperature-indication it affords.

When equal volumes of colorless, concentrated sulphuric acid (good commercial acid answers every purpose) and chloroform are shaken together in a glass-stoppered vial, and then allowed to separate, there should be no color imparted to either liquid, or but a faint yellowish tinge to the acid after twelve hours' standing; and there should be no sensible warmth developed at the time of mixing.

A drachm or two of chloroform spontaneously evaporated from bibulous paper, should give during the evaporation of the last portions, but a faint, momentary, foreign, aromatic odor, and leave the paper odorless. Half a fluid ounce or more, spontaneously evaporated from a breakfast plate, by causing it to flow back and forth, leaves all the impurities to pass off with the last portions, when, by the odor, their character and quantity may be estimated to a practical degree of accuracy. There should be no disagreeable, empyreumatic, mawkish or chlorine-like odor whatever, and only a slight degree of transient, aromatic odor, free from pungency, and the plate should be left with an odorless, tasteless residue of condensed moisture only, upon its surface.

These tests are so simple and discriminating, that they leave little to be desired after the examination of a good specimen by them, and after a very little experience in their application.

The officinal description of this preparation is, in the writer's opinion, faulty, and has contributed in some measure to the low character of the spirit as found in commerce. It is described as colorless; but the writer has never seen it colorless when of fair quality, except after exposure to strong light; and it is hard to understand how 4.2 per cent. of so very yellow a liquid as ordinary hyponitrous ether is, could be added to colorless alcohol without imparting color to the whole mixture. Again, it is hard to understand how an addition of 4.2 per cent. of a liquid whose density is .947, to alcohol of a density of .835, could furnish a mixture or solution whose density might be .834, or below that of the alcohol used. The preparation, however, when well made and well kept, is never without a decided color, yellow at first, and of a greenish tint of yellow, after long keeping, and a s. g. varying with the age of the preparation, from .842 when recently prepared to .838 when two years old. The boiling point of the liquid, when the thermometer is immersed in it, is 157°, instead of "160°."

The writer here takes occasion to suggest to dispensing pharmaceutists, that some reformation is needed in the purchase and management of this important preparation. In justice to the physician and patient, it should be purchased, not in carboys, nor from the carboys of the wholesale druggists, but in bottles put up by the manufacturer and properly attested by label and seal; and the smaller the bottles the better. The stock of such bottles should be kept in a dark, cool place, and the one open for dispensing should also be carefully secluded, say in a closet, and not, as is usual, exposed to light on the open shelves. A bright light upon a botttle half full, will change the preparation in four hours, rendering it acid, and colorless, or nearly so; whilst if properly put up and preserved, it remains unchanged for years. When slightly acid only, and otherwise fit to be reclaimed, a small, hard fragment of carbonate of ammonia is the most appropriate corrigent, because acetate and hyponitrate of ammonia are remedial in the same direction as the preparation itself. For further details upon the subject of this preparation, the writer refers to a paper published in the Amer. Journal of Pharmacy, 3d Series, Vol. IV., No. 4. Specimens of various ages, and exhibiting the mode of putting up, &c., are upon

the mixture within half an hour. This color becomes slightly deeper in twelve hours, but does not become brownish, nor lose its transparency. When at once well put up in small bottles, and covered with dark-blue paper, it keeps well for any reasonable time.

One pint of the spirit, distilled from fragments of glass by means of a water bath, yields one-fourth of its volume below the temperature of 182°, and this distillate contains nearly all the hyponitrous ether of the preparation. This distillate, again distilled in exactly the same manner, yields one fluid-ounce of distillate below 176°. This last, upon the addition of an equal volume of water, added in a stream, and without agitation, yields a supernatant, ethereal layer of two and a half fluid drachms. The most simple and easy test is, however, the boiling point, but the application involves some points of management indispensable to its practical utility. About a pint of water is heated in any convenient vessel, to 160°. An ordinary test-tube, half filled with the spirit, and covered by the thumb, is plunged into the heated water. After being held immersed for a time long enough to acquire nearly the temperature of the water, the tube is uncovered and a few small fragments of broken glass dropped into it. If the spirit contains the proper proportion of hyponitrous ether, it will boil distinctly, and commonly pretty actively for some time; but if deficient in strength it will not boil, but only effervesce slightly, or give off small bubbles that are not persistent, and do not increase, but rather decrease as they ascend to the surface, and do not form a bead at any part of the edge of the surface. The true boiling is distinguished by larger bubbles, which increase in size as they ascend through the liquid, and which rise in such rapid succession as to form a persistent bead around some part of the edge of the surface. The only practical difficulty in the application of this test, is to distinguish between the effervescence which will occur at this temperature, and even far below it, when any proportion of hyponitrous ether is present, and true ebullition. But this difficulty is easily surmounted by a little close observation, and the test then becomes simple and sufficient, since no ordinary art could give the liquid so low a boiling point. When freshly prepared, the spirit will boil with the bath at 158°.

nitric acid, when the acid is used directly, or uncombined; and finally it re-distils with some loss, and without advantage from one half to three fourths of the alcohol, this unnecessary distillation occupying half the time of the entire process.

The writer therefore offers the following formula and process as a substitute, after having used it with convenience and success for some years, upon a scale of quantity varying from that of the formula given, to one which yields eight carboys a day.

The design is that of producing hyponitrous ether just so far diluted with alcohol at the moment of its formation as to be easily manageable, and to render the reactions in the production easily controlled at all seasons of the year; and then to add this dilute hyponitrous ether to alcohol in fixed, given proportion.

Take of Nitric Acid, fourteen fluid ounces.
Alcohol, ten pints, or a sufficient quantity.
Carbonate of Potassa, an ounce.

Introduce four pints of the alcohol into a one-gallon glass retort, and slowly add the acid to it. Having adapted a good condensing apparatus, apply heat to the retort by means of a moveable water bath until the mixture boils, and faint yellow vapors appear in the retort. As soon as the boiling becomes brisk, and the distillate of a yellow color, remove the water bath, and allow the distillation to proceed spontaneously until the rate of distillation decreases; then cautiously re-apply the water bath, and continue the distillation until three pints and four fluid-ounces have been received. To this distillate add the carbonate of potassa; agitate the mixture well, and redistil it, slowly at first, from the thoroughly rinsed apparatus, until two pints and twelve fluid-ounces has been received. To this rectified distillate add alcohol until the whole measures eight and a half pints, and preserve this product in small, well filled bottles excluded from the light.

Spirit of nitric ether is a volatile liquid, of a clear, bright-yellow, or greenish yellow tint, and fragrant odor, free from pungency. The s. g. when recently prepared, is .842, and the boiling point 157°. When mixed with an equal volume of dilute solution of potassa, (made with equal parts of liquor potassæ and distilled water,) it gives a bright yellow color to

way could the elements of sulphuric acid be so presented. These tests, it is believed, will be adequate to characterize this preparation easily, and as simply as may be, and they will exclude from use every specimen of so-called Hoffmann's anodyne, that the writer has ever met with in the common market. As usually found, being the residue of the ether process, it contains either no heavy oil of wine at all, or the merest trace of it, but consists of mixtures of bad ether and partially decomposed alcohol in varying proportion, of light oil of wine and the other hydrocarbons that render ether unclean. It is an opprobium upon the profession of Pharmacy that any such preparation should find sale in the market, since it is scarcely more to be considered as Hoffmann's anodyne, than diluted alcohol as laudanum.

As may be noticed by those near, in examining the specimen presented, the test by evaporation from bibulous paper is also very significant as applied to this preparation in comparison with that ordinarily met with. In this case, however, the paper is never left odorless, and remains moist and flexible for a long time.

Spiritus Ætheris Nitrici.

After having used the officinal formula and process, and various multiples of it, some twenty-three times during a period of two or three years, the writer abandoned it for what he considers a better process, for the following reasons. It is unnecessarily circuitous and complex. It makes use of a salt often difficult to obtain free from chlorides, and which is nearly insoluble in the menstruum used, rendering the reactions and results variable and precarious, chiefly through the difficulty of equally heating the contents of a retort that contains a mass or cake of insoluble heavy matter at the bottom. From this difficulty of equable heating, and the variable reactions that result, it follows that the proportion of aldehyde in the preparation is variable and often excessive, thus materially impairing its keeping properties. This probably arises from the overheating of the portions of liquid confined under or within the cake of nitrate of potassa at the bottom of the retort. The process yields a smaller proportion of hyponitrous ether, than an equivalent quantity of

Spiritus Ætheris Compositus.

When the diluted ethereal oil is used for this preparation, the quantity must of course be doubled.

The description and tests for this preparation appear rather too vague and indefinite, since they may be applied to the preparation as it is commonly met with, although that is simply the residue of the ether rectification process, and commonly contains no heavy oil of wine whatever.

The compound spirit of ether of the writer's practice is a colorless volatile liquid, of a delicate fruity ethereal odor, of a s. g. of .816, and is neutral, or very slightly acid to litmus. It usually gives only a faint cloudiness with solution of chloride of barium, even after some months' keeping, but when evaporated to dryness with the solution, in a water bath, yields a dense white precipitate of sulphate of baryta. Twenty drops of the compound spirit stirred into a pint of water visibly affects the transparency of the water, and yields the characteristic fruity odor of the dilute oil of wine, free from that of ether and alcohol. Sixty drops, or twenty-three minims, renders a pint of water decidedly milky, but not properly opalescent, for the milkiness is of a dull leaden color, and not such as is commonly called opalescence.

If a few drops of the compound spirit of ether be burned off a clear glass or porcelain surface, the surface is left with a sharp acid taste and reaction, but without visible residue. In burning off the ether and alcohol, the sulphuric acid of the heavy oil of wine is re-produced as in the quantitative test, and remains upon the surface, where it yields its characteristic tests and reactions.

One fluid-ounce of the compound spirit evaporated to dryness in a water bath with an excess of solution of chloride of barium yields an insoluble precipitate of sulphate of baryta, which after being washed and dried upon a tared filter, weighs 6.25 grains.

The circumstance that chloride of barium fails to precipitate the compound spirit of ether when simply added in the cold, but still yields the above described precipitate of sulphate of baryta under the prescribed management recognizes the character and quality of the preparation, since in no other probable

adapted a proper condenser, distil from a sand bath at a temperature between 318° and 330° till a black froth arises in the retort, or until the distillation of oily liquid ceases. Separate the oily ethereal stratum from the distillate, and expose it for twelve hours in a shallow capsule. Then wash the oily residue by agitation with a solution of the carbonate of soda in half a fluid-ounce of distilled water, and throw the mixture upon a a well moistened filter.

When the carbonate of soda solution shall have drained off, pour upon the oil of wine in the filter an equal volume of distilled water; and finally, when it shall have again drained, transfer the oil of wine to its recipient by perforating the point of the filter.

The product should measure two to two and a half fluid drachms. When the oil of wine is to be kept more than a week, add to it an equal volume of strong alcohol.

Ethereal oil is a volatile liquid of a yellowish tinge, generally opalescent when recently made. It has an aromatic odor somewhat resembling pennyroyal. Its s. g. is 1.1, and it does not change the color of litmus. The tincture or mixture for preservation is bright and transparent, of a light brown color, and has a s. g. of .960.

In the management of this process, a thermometer with the bulb immersed in the mixture is almost essential, and the proper temperature for the distillation is 325°. The separation of the sulphate of lead deposited from the acid upon dilution, is the next important point, as its exclusion allows the operator to carry the distillation so much farther before the mixture froths over as to increase the yield from the materials by about one-third; and finally it was noticed that the washing with caustic alkali decomposed a portion of the oil, whilst the result obtained by the use of carbonated alkali in much smaller proportion was as good and produced no decomposition. The proportions of alcohol and acid are those of Serrulas.

For further detail of experiments upon this and the succeeding preparation, the writer refers to his paper on the subject, published in the Amer. Jour. of Pharm., 3d series, Vol. V. No. 3.

The specimen exhibited is diluted with alcohol, and is now some months old. It has not been examined since it was put up.

some specimens on the table, which are nearly chemically pure. The rapid evaporation of ether over so broad a surface produces a degree of cold that retards its own evaporation, while it renders the less volatile matters almost fixed upon the plate until the very last portions are passing off. Then, however, all admissible impurity passes away, leaving a dewy surface that should be absolutely odorless and tasteless. In the writer's opinion, only such ether as this is adapted to inhalation.

From various circumstances connected with the manufacture of ether on the large scale, this substance as found in the markets differs materially from that which results from the officinal process. The impurities in the two cases are very different in character and amount, since they vary so much with the quality of the materials used, the arrangement and management of the apparatus and temperature, and the extent to which the rectification is carried. Therefore, as few pharmaceutists, for various reasons, use the process, whilst all have the greatest need for the tests of so important a preparation, these tests should be adapted to apply equally, or even more especially to the commercial article. The writer has only applied them to commercial ethers a few times, and has seen none that would answer their requirements. It is nevertheles, true, that the preparation of good ether is both simple and easy.

Oleum Æthereum.

The writer's experience with this preparation would indicate a change in the officinal formula and directions, since that by which he has obtained the best and most uniform results, whether upon the scale of the Pharmacopœia, or a larger, is materially different.

The process is as follows:

Take of	Alcohol,	two pints.
	Sulphuric acid,	two pints and 4 fluid-ounces.
	Carbonate of soda,	one scruple.
	Distilled water,	a sufficient quantity.

To the alcohol in a suitable vessel, add the acid slowly; stir the mixture, and allow it to stand twenty-four hours. Decant the clear liquid into a four pint retort, excluding all the sediment; then having fitted a thermometer in the tubulure, and

Æther Fortior.

Take of Ether,	three pints.
Chloride of Calcium, in powder,	
Lime in powder, of each	one ounce.
Water,	three pints.

Shake the ether and water together thoroughly in a gallon bottle, and when the water has subsided, separate the ether. Agitate this well with the chloride of calcium and lime, and allow the mixture to stand twenty-four hours. Then decant the ether off the residue into a retort, and having adapted a proper condenser, distil one and a half pints.

Ether fortior has a sp. gr. of .728, and contains about 8 per cent. of alcohol. It does not redden litmus; shaken with an equal bulk of water, it loses one-tenth to one-eighth of its volume, according as the temperature is lower or higher. A test tube half filled, held in the hand, boils very actively upon the addition of fragments of broken glass. Half a fluid-ounce of the ether fortior evaporated spontaneously from a common breakfast-plate, by causing it to flow back and forth over the surface, gives a moderate degree of aromatic odor of light oil of wine only, and this only as the last portions pass off, and leaves the surface odorless and tasteless, but covered with a dewy deposit of moisture from the atmosphere.

In this process the washing diminishes the volume of the ether to thirty-six fluid ounces, and the washed ether has a sp. gr. of .730 to .732. The volume is still farther reduced by the chloride of calcium and lime to 33½ f.ʒ. After the distillation of one and a half pints of the stronger ether, some 4 f.ʒ more may be recovered, but this is neither stronger nor cleaner than the original ether.

In the testing this stronger ether, the test of quality by bibulous paper is not sufficiently delicate, since that method should give with it only negative results. But by modifying it so as to use a much larger quantity in the manner described, and now exhibited, the smallest degree of impurity is detected. As may be observed by those near by, this test is almost hypercritical, since it detects the minute proportion of light oil of wine in

and quantity may be easily estimated. It is difficult to convey an adequate idea of the value of so simple an expedient to those who merely hear it described, and therefore the writer begs those near to illustrate it for themselves, with the specimens on the table. The application of these three simple tests, with that of litmus paper, will always serve to discriminate between good and bad ether. It should, however, be borne in mind, that strictly officinal ether is never so clean as to yield no foreign odor during its evaporation from the paper. It always contains besides alcohol and water a small proportion of light oil of wine, which yields an aromatic odor free from pungency or disagreeable character, and leaves the paper when quite dry, almost, if not quite odorless. Disagreeable or empyreumatic odor, or an amount of light oil of wine sufficient to give pungency, are inadmissible in ether, and need never be present except through careless or bad management.

The writer would therefore suggest the following modification of the paragraph of tests, &c.:

Ether wholly evaporates in the air. It does not redden litmus. Shaken with an equal bulk of water it loses one-fifth to one-fourth of its volume. A test tube half filled with ether held in the hand, commences to boil upon the addition of small fragments of broken glass. In evaporating spontaneously from bibulous paper, it should give only a moderate degree of foreign odor, and that of an aromatic character, free from pungency, and should finally leave the paper, when dry, nearly, or quite odorless.

This ether, however, containing as it does about 25 per cent. of 88 per cent. alcohol, is not well adapted to the wants of the medical profession at this time, when by far the greatest consumption is for anæsthetic purposes. Indeed, the officinal ether, however clean, produces anæsthesia very slowly and very badly and is rarely used for that important purpose. It is therefore suggested that another preparation be introduced with the following title and formula:

pied by the ether. After the separation, however, when the tube is brought upright, the water occupies this portion while the volume of the ether above is comparatively unaffected by such drops. As exhibited now, with ether known to be of s. g. ·751, the loss is a little more than half an inch, or, by estimation, about 22 per cent. of its volume. Another test of the s. g. or ethereal strength of ether is its boiling point. If a half filled test tube be grasped in the hand for two or three minutes, and a small fragment or two of broken glass be then dropped into it, the phenomena of ebullition will be exhibited in proportion to the strength of the ether. The test tube should not be grasped too firmly, because the muscular action then obstructs the circulation of the blood in the hand, and the warming is protracted or insufficient. The fragments of glass are necessary, because liquids are often heated far above their boiling points in glass vessels without ebulition at all, or with very irregular and explosive boiling. By this test, ether above ·760 s. g. can scarcely be made to give off any bubbles whatever under the most favorable circumstances of the application of the test. Ether of ·750 s. g., as may be here seen, yields small bubbles from one or two points of the broken glass only. The writer supposes (for this is a new test) that in cold weather it must be difficult to produce even this commencing ebullition in this way. A characteristic of true ebullition, which the writer has come to regard as conclusive, and as diagnostic of true ebullition from the mere giving off of gasses by liquids, is well seen in the application of this test. It is simply that the bubbles of vapor constantly increase in size as they approach the surface of boiling liquids. The reasons why they should do so are obvious.

A third equally simple test indicates the quality of the ether, as to the character and amount of its impurities, or whether it be clean, clean enough for medicinal uses, or unclean or "dirty." It consists in pouring upon a piece of bibulous paper one or two drachms of the ether, and of observing the odor closely as the ether evaporates. At first the ether odor predominates so strongly that little or no foreign odor is appreciable, but as the paper begins to appear greasy, rather than wet, the odor of the impurities becomes distinct, and as these impurities then pass off with the remainder of the ether in the order of their volatility, or remain more or less fixed upon the paper, their characters

Place the retort upon a sand bath, and connect it by a long adapter with a proper condenser; then raise the heat quickly until the liquid boils. When the ethereal liquid begins to pass over, introduce gradually into the retort the remainder of the alcohol, taking care that it shall enter in a continuous stream, and in such quantity as to maintain the temperature of the boiling liquid between 266° and 274°, the fire being kept steady.

This feeding may be accomplished by connecting an elevated vessel containing the alcohol with the retort by means of a tube provided with a stopcock to regulate the discharge, and passing nearly to the bottom of the retort, through a cork accurately fitted into the tubulure. When all the alcohol has been thus added, continue the distillation until the temperature rises to 286°. "To the product thus obtained, &c." as in the officinal directions. The finished product should be about three and a half pints.

In giving the characteristics and tests for ether, the Pharmacopœia is, according to the experience of the writer, very far out of the way. Shaken with an equal bulk of water, it loses, instead of "one-tenth of its volume," from one-fifth to one-fourth of its volume, according to the temperature of the liquids. The writer has never applied this simple and valuable test to ether of s. g. .750, without observing a loss of 20 per cent. and this when the ether is saturated, as far as possible, with water or very dilute alcohol. When water has been separated perfectly, and the diluent is strong alcohol, it loses 26 per cent., or even more, of its volume. This test is practically and usefully applicable from s. g. .745 to .755. That is, by it ether may be determined to be within or without this range. The test is best applied by means of a slender graduated tube of 100 divisions, but is also easily applied by means of an ordinary six inch test tube and a carpenter's rule, the rule being simply held beside the tube in filling it, and in reading the result. For instance, 2½ inches of water is first put into the tube, and then 2½ inches of ether. The tube is then closed with the thumb, well shaken, and the mixture allowed to separate with the closed tube held in an inverted position. As the water subsides, small drops are frequently left adhering to the sides of that part of tube occu-

After trying various proportions of alcohol and acid for the etherifying mixture, a rule was adopted, and has since been used with success, that the proper mixture is that which boils at or a few degrees above the etherifying temperature of 266°. If the poportion of alcohol be greater, so that the mixture boils at a lower temperature, as in the officinal process, an undue or unnecessary proportion of the alcohol distils over with the ether, unchanged, whilst less ether is formed, and the acid kept too dilute for its full etherifying effect. The boiling point gradually rises, unless fresh alcohol be added, and would soon pass the proper range of temperature, unless, as in the officinal process, the feeding of the alcohol be commenced. Then the rate of distillation is in great measure governed by the rate of feeding, and the guide should be the ethereal strength of the product, since any reasonable amount of alcohol may be fed into the mixture at almost any rate, and pass through it nearly unchanged.

On the other hand, if the proportion of alcohol in the mixture be too small, or becomes so during the process by too slow feeding or too active firing, the boiling point rises above the proper range, and a portion of the acid is decomposed with the production of sulphurous acid, olefiant gas, and light oil of wine, and a rapidly diminishing proportion of ether.

The proportions which come nearest to a proper mixture upon the scale, and with the materials of the Pharmacopœia, are,

Of Alcohol, two pints.

Sulphuric acid, twenty-one and a half fluid ounces.

And into this, if the temperature be even tolerably well regulated, four pints of alcohol may be passed. But alcohol stronger than the officinal is better adapted to this process, and for this and other purposes, the Alcohol Fortior has been suggested.

The formula then would be as follows:

Take of Alcohol Fortior,	six pints.
Sulphuric Acid,	twenty one fluid ounces.
Potassa,	six drachms.
Distilled Water,	three fluid ounces.

To two pints of the alcohol contained in a six pint tubulated glass retort, fitted with a thermometer, add gradually the acid.

obtained equivalent weights long since, in all similar instances within the scope of his practice, and communicates them in this paper under the formulæ in which they have been used without again referring to the reason.

Acetum Scillæ.

The s. g. of the officinal preparation, made by percolation, is 1.044. The last portions of the percolate may be economically displaced by water, even after the prescribed measure has been obtained, and the surplus kept for supplying loss by evaporation in making the syrup.

Acidum Benzoicum.

The officinal direction to resublime the acid after pressure in bibulous paper renders the process very wasteful, while it tends to no practical good result in the writer's experience. An originally brown acid is not by any ordinary skill rendered whiter by a second sublimation, but often darker; whilst the small proportion of adherent pyrogenous oily matter is not objectionable in a medicinal point of view. It is therefore suggested, that the direction to resublime be omitted.

An ordorless acid, or one with any odor other than that of Benzoin, should not be used for medicinal purposes.

Although not strictly within the limits of the design of this paper, the writer adduces the continued extensive demand for Lactates, Phosphates, and Valerianates as a reason for suggesting that formulæ for lactic, phosphoric and valerianic acids be introduced, into the Pharmacopœia. The medicinal use of the salts of the last named acid appears to have been increasing very steadily for two years past, whilst the published results from their use are generally favorable.

Æther.

After having used a multiple of the U. S. P. process for ether several times, the writer abandoned that part of the directions which prescribes that a portion of the acid be mixed with that portion of the alcohol that is to be fed into the retort during the process, and the result is that that proceeding has since been regarded as a useless complication of the process.

as "100 p. c. alcohol," or "Cologne spirit," is necessarily free from notable impurity, since the process by which such a strength is obtained separates nearly all the grain oils.

Those formulæ in which any change is suggested are as follows: the order of the Pharmacopœia being observed.

Acetum Opii.

A common officinal direction is that a percolate or other product, as in the case of this preparation, be evaporated to a given measure. As evaporation is commonly performed in wide shallow vessels, this direction involves the necessity of transferring the fluid hot, and over a bad pouring lip, into a measuring vessel twice or oftener; or what is more common, the prescribed measure of water is put into the evaporating basin before the operation is commenced, and a stick or stirrer being set upright in the center of the basin, is marked at the surface of the liquid, and then kept to determine the end of the process by. This practice is not sufficiently accurate, however, for this preparation, nor for many to which it is applied; first, because a very trifling error over so broad a surface makes a material difference in the measure, and consequently in the medicinal strength of the liquid; and again, because there is a marked difference between the volume of any liquid hot and cold. A good method is to evaporate by some such estimation, to a little less than the prescribed measure, cool the liquid and make up the measure accurately with distilled water. It is, however, still more accurate, and far more convenient and easy, to manipulate with a tared basin, and evaporate to a given weight equivalent to the measure. The basin may then be set upon the scale every few minutes till the exact result is obtained, without trouble or loss, or risk to the glass graduated measure. The writer would not omit the prescribed measure, but simply add the equivalent weight as found in practice, and would therefore suggest that the last sentence of the officinal directions for the management of this preparation read as follows: "Lastly, add the sugar, and by means of a water bath evaporate to three pints and four fluid ounces, or to fifty-four and a half ounces."

This method has been found so convenient, that the writer has

physician and pharmaceutist to discriminate, the bad articles may be rejected, and the opprobrium reflected upon the professions by such articles be avoided. In the opinion of the writer, there is no more fertile source of growth and strength for quackery than may be found in the uncertainty of the results obtained by the legitimate profession of medicine through the uncertain and bad quality of medicinal substances; and no more certain,—indeed, in this country, no other,—means of controlling the manufacture and sale of bad articles, than by disseminating the means of critical scrutiny and discrimination through authoritative channels. That the commentators upon the Pharmacopœia have, in their Dispensatory, so thoroughly and ably treated of this subject, is not perhaps a good argument for its being abridged in any other authoritative position. The little that may have been collected by the writer in amendment of this feature is given under the special formulæ.

A general feature suggested for adoption in the Pharmacopœia, is, that the result or yield of each process be added to the formulæ. Besides being a convenient guide for reference in the multiplication or division of the formulæ to adapt them to the wants of pharmaceutists, it would furnish a means of control for the processes whereby to detect errors or mismanagement, and secure more uniformity in result. Such an amendment would tend greatly to an uniform strength and consistence for Extracts, Syrups, &c., and would be at the same time a guide to the operator in finishing his process, since it is difficult to judge from a hot extract or syrup as to what the consistence would be if cold, even by the partial cooling of small portions. In this connection it is suggested that the words "proper consistence" are too loose and indefinite for an authoritative formulary; and the varying and often semifluid consistence of extracts as met with, is adduced in evidence that some better criterion is needed.

In the Materia Medica list it is suggested that, for convenience of use at times, and for various purposes, such as the ether process, an Alcohol Fortior be added, to have a s. g. of ·817, that is, to contain 92 per cent. by weight, or 95 per cent. by volume, of absolute alcohol. Such alcohol, commonly known

exercise of greater care in the production and treatment of them, together with changes in the character of our grapes and lessened cost by increased supply, that our own growers will be enabled to produce wines equal and even superior, in *all respects*, to those for which we now depend upon foreign sources.

NOTES AND SUGGESTIONS UPON SOME OF THE PROCESSES OF THE UNITED STATES PHARMACOPŒIA, ESPECIALLY DIRECTED TO THE COMMITTEES OF REVISION.

By Edward R. Squibb, M. D., of New York.

As the time for revising the National Pharmacopœia approaches, and the local and general committees are about to be appointed, it becomes a matter of importance that the subject of revision and amendment should occupy a proper share of attention and research in the Medical and Pharmaceutical professions throughout the country; and the writer therefore begs leave to call the attention of this Association and its constituency to an early and an earnest consideration of the subject, in order that the deservedly high character of our national standard may be sustained by a steady progress.

In the active practice of Pharmacy for some years past, during which time many of the processes of the Pharmacopœia have been repeatedly used, a few apparent amendments have from time to time suggested themselves; and it is the object of this paper to lay these before this Association, and the profession of Medicine and Pharmacy at large, in order that through the abundance of time yet remaining, they may be examined and tried by others.

If any general feature of the Pharmacopœia be susceptible of great amendment now, it is that which relates to simple, reliable tests of purity for its materials and products. The progress made within the past ten years in the direction of cheapening debasing and adulterating medicinal substances, imperatively demands a corresponding circumspection and research on the part of the Pharmacopœia, in order that by teaching the

years old, and to have cost him ten dollars per gallon, though made from inferior wine; this fact explains why the best foreign brands of this spirit command the high rates they now do.

The Messrs. Zimmerman, who are the only parties extensively engaged in brandy manufacture (*from wine,*) in our country, annually produce about 5000 gallons, the most of which is from the lees and pummice, and held by them in quantities at from two to three dollars per gallon. They will furnish it of any desired proof and without color, for pharmaceutical purposes, if desired; but this market standard of strength is the same as that adapted in imported brands, termed fourth proof, and containing 58 per cent. of alcohol of sp. gr., .793.

The conclusion arrived at in regard to Catawba brandy, it being produced by processes identical with those of the French, and comparing favorably in flavor and other characteristics, with French brandy when of equal age, is, that the better qualities can, with propriety, be substituted for the *Spiritus Vini Gallici* of our Pharmacopœia.

In conclusion, it may be remarked, that vine culture and wine-making date as far back as the first settlement of our country; yet not until within the last twenty-five years, has it assumed much importance. The census of 1850 shows the total crop of the Union to be 221,000 gallons for that year, of which California furnished one-third, and Ohio one-quarter, Pennsylvania one-eighth, Missouri and Indiana each one-twentieth. The product was an average of over 35 per cent. above that of 1840.

It is now estimated that there are nearly 4,000 acres in vineyards in Ohio alone; that the crops of California for 1857 was one and a half million of gallons; this, with the increase in the other wine-making States, would swell the total crop to nearly three millions of gallons for 1857, almost four times as much as was produced in 1850.

The product, though small when it is compared with that of France and other wine-growing countries, shows the rapid development which is being made in this branch of agricultural industry in our favored land.

Although the products of our grapes do not as yet in some respects equal those of other districts, yet we may reasonably hope, in due time, with increased experience in cultivation, the

tically the same processes employed in France in making the different varieties of cognac.

The common Catawba wine, that which is unfit for the making of still or of champagne wine, is distilled with the grape pummice or wine lees, or with a mixture of both.

When we would compare it with foreign brandy, we must make allowance for the differences in age, and compare those only which were made by the same process; under these circumstances the Catawba, from its superior boquet, will be found better than the French brandies, in the estimation of most judges. Catawba brandy, made from pure wine, is the best, its quality differing, of course, with the quality of the wine used; that from lees and wine is classed next in value; that from pummice and wine last, unless we also include those which are further sophisticated by the addition of alcohol.

In distilling pure wine there comes over alcohol, water, wine, fusel oil, various vinous ethers, and acetic acid; if instead of pure wine, a mixture of wine and pummice or lees is employed, the result is the same, except there will exist in the distillate a larger proportion of fusel oil, and perhaps, from less careful distillation, other causes tending to injure its delicacy of flavor and aroma.

The aroma and flavor of the Catawba is certainly superior to that of most European grapes, and it should, and does in fact, produce by the same processes and the same careful manipulations as those by which the best of French cognac is made, a product equal, and even superior to it.

I have examined specimens of brandy made by the Messrs. Zimmerman, from *pure* but inferior wine, without any additions, and varying in age from two to five years. These, for purity and delicacy of flavor, and alcholic strength, (containing 58 per cent of alcohol,) compare with the best of foreign varieties. The best native brandies are made from inferior but unadulterated still wine, which from the excess in it of acidity and other causes, is unfit for bottling, and for making champagne wine; yet at the low cost of such wines, the distillers assure me that the brandy made from them cannot be afforded by them at wholesale, at less than five dollars per gallon. Mr. Longworth sent me a specimen from his cellars, which he stated to be two

of loss,* and so produce only a medium or inferior quality of wine,—that is, one that contains less alcohol, less extractive matter, (sugar, &c.,) and more acid.

Cider is the article most employed for its adulteration, though the inferior qualities of imported wines are also used; besides this adulteration, however, large quantities are made entirely artificially, by fermenting a solution of sugar in water with the pummice of the grape, (the residue left in the press after the expression of the juice,) and afterwards adding the necessary proportion of alcohol or strong whiskey to bring it up to the standard strength; the result is, that of a large amount of Catawba wine annually produced, only a portion, probably small at that, is of superior quality, and properly represents the grape; the rest, either through the ignorance, fear, or carelessness of the producer, is injured in quality, or else through fraud is entirely a fabrication.

Sugar was formerly added to the must intended for still wine; but it is now done no longer; the addition was made for the purpose of increasing the alcoholic strength of the wine, and to envelop its acidity.

The sweet or ladies wine has from 18 to 32 ounces of refined sugar added to each gallon of must before fermentation sets in; this is the only addition made, and as there is not enough gluten present in the juice to convert all this added sugar into alcohol, the wine, after it is finished, is sweet and light, instead of strong and dry.

This sweet wine suits some palates, but is considered inferior to dry wine, which, when properly made from ripe grapes, requires no foreign admixture whatever, and most perfectly represents the wine quality of the grape.

Catawba brandy.—This distilled spirit, introduced within the last six years by Messrs. Zimmerman, is manufactured by iden-

* Messrs. Zimmerman state, that this fear of loss arises from the fact that the disease, mildew, which is more or less present upon the vines of every vineyard, and in every season, causes the berry to commence falling off just as it is beginning to ripen, and when this falling off threatens to rob the vineyard seriously, the growers cut off the whole in their unripe state, and make such wine as they best can.

native wines appears to lie in the fact, that most of our wine producers cut their grapes too early through fear of loss, and hence do not produce as good a quality as the grape is capable of forming.

I infer from the information I have received, that by carefully selecting the perfectly ripe grapes, or by allowing them to partially dry, and further ripen after being picked, a wine *could be produced* from the Catawba, and from many others of our native grapes, rich in alcohol, and comparing favorably with the officinal white wines in freedom from acidity.

Such wine would require age to insure the further removal of its acidity by conversion into various ethers through mutual action between it and the alcohol of the wine, and by the deposition of the tartaric acid in the form of tartar. Mr. Longworth declares, that with similar treatment the Catawba will produce a wine identical in strength, freedom from acidity, and durability with sherry, though, of course, it will possess the peculiar boquet of the Catawba.

One great difficulty in the way of our obtaining at present, wines from our own grapes resembling the strong foreign ones, lies in the fact, that labor here is much higher than in Europe; that the demand for our wines, even as now made, is greater than the supply, and that consequently producers have not sufficient inducement to keep their stocks a longer time, or to make the strong wines. When, however, the production has increased to that extent that the supply will exceed the current demand, or the cost of production is lessened, then we may expect a change in its character, bringing it to a nearer resemblance to the standard we require.

The Adulteration of Native Wines.—From information which I have elicited from various sources, among others from Mr. Nicholas Longworth, of Cincinnati, and Messrs. Zimmerman & Co., of Cincinnati, both gentlemen intimately connected with the history of the wine culture and wine manufacture of our country, it is evident that our native wines are brought into the school of adulteration, and that there is no want of scholars and teachers.

Good Catawba is said to be as scarce as old Catawba, for the reason that so many growers cut their grapes too soon, for fear

they were found to be less active than those made from the officinal wine, and to disagree to a greater extent with the patients.

In the case of *Vinum Antimonii*, the salt dissolved more readily than in sherry, and a specimen kept to this time has shown no precipitate or apparent change. *Vinum colchici seminis* prepared with Catawba, formed a beautiful clear wine, and as eligible as that prepared from sherry, except that it required larger doses.

I find, that by increasing the strength of Catawba to that of sherry, by adding alcohol, that its solvent powers were fully equal to sherry, rather more indeed in fine preparations, which increased action, it is presumed, was due to the large portions of free acids in it.

From these experiments, the conclusions to which I have arrived are, that the still Catawba produced by our native wine growers, is unfit for the purposes of a menstruum in the preparation of most medicated wines; and that even where its strength is increased by the addition of alcohol, the presence of so much acidity is still an objection to its use.

The *query*, are any of our native wines applicable for use in Pharmacy as a menstruum being answered, it may be proper to consider whether they *could* be made so.

I believe it is the opinion of those well versed in the culture of the grape, that, by proper manipulation, a wine could be produced from the Catawba, and from other of our grapes, which would nearly resemble the strong white wines of foreign production.

Sherry, Madeira, and others of similar character, are made by either drying the grapes partially before pressing, in order to more fully ripen them and render the juice rich in sugar, or else sugar is added to the must. By this means a strong dry wine is produced, the strength of which is further augmented by the addition of from 8 to 15 per cent. of brandy. Without, in fact, this last addition being made, no pure wine could bear transportation in warm weather, or even preserve itself, unless kept in good cellars.

The most of the ripe Catawba grapes are richer in saccharine matter than that of most European grapes. This fault in our

Medicinally, the only value that wines possess over diluted alcohol of the same strength, is presumed to be in its possessing an agreeable aroma and flavor, and from the presence in it of a small proportion of tartaric, phosphoric tannic, and acetic acids, with a still smaller per centage of various wine ethers, rendering it peculiarly adapted for use in certain conditions of the system; but as a menstruum, its value is to be estimated only by the amount of alcohol it contains, and its freedom from acidity, which last, however, may be of no serious objection in certain medicated wines.

The analysis of several specimens of still Catawba showed the per centage of alcohol (sp. gr. 0.835) in this wine to range from 8.65 to 11.75 per cent., and that it contains from 2.15 to 3.25 per cent. of extractive matter, nearly four-fifths of this being sugar, and from .08 of one per cent. to 1.33 per cent. free acids, the greatest per centage of these acids being the tartaric, which varies in Catawba from 2 to 7 per mille, being greater in new than in old wine. The tannic acid varies from one half to one per mille; the phosphoric acid from one half to five per mille; the acetic acid from one quarter to one and a quarter per mille.

From the above I was led to infer that this wine was *unfit* for our purposes as a menstruum, from its not containing over one half the necessary proportion of alcohol, and from the presence in it of an excess of free acids.

This inference was borne out by experiment.

I have prepared as representatives of that class of Pharmacopœial preparations entitled *Vina Medicata*, those of the rhubarb, ipecacuanha, ergot, and colchicum seed.

I found that the Catawba, from its want of alcoholic strength, does not as thoroughly exhaust each portion of its active matter as does sherry of standard strength.

Moreover, the large per centage of water in it dissolves more or less of the gum, starch, and other inert portions of the material acted upon, rendering displacement difficult, and from being present in the wines when finished, impair their beauty of appearance and their permanence. I noticed also a tendency of the excess of free acid in the Catawba to redden some of the vegetable colors.

When samples of these wines were offered as medicinal agents,

ON THE APPLICATION OF NATIVE WINES TO USE IN PHARMACY.

By FREDERICK STEARNS, of Detroit.

"Are any of our native wines applicable for use in Pharmacy, as a menstruum? Are these wines the subject of adulteration; and can the brandy derived from our native wine-growers be properly substituted for the *Spiritus Vini Gallici* of the Pharmacopœia?"

This question, accepted by the writer at our meeting in Philadelphia, last year, comprises three distinct queries, which I propose to answer in the order propounded.

The applicability of our native wines for use, as a pharmaceutical menstruum, depends naturally upon whether they compare favorably with those wines now recognized in our Pharmacopœia, and especially with the only one employed in its preparations, namely, Sherry.

This wine, according to authority, when good, possesses a dry aromatic flavor, without any acidity, ranking among the strong white wines, and containing an average of 19.17 per cent. of alcohol, sp. gr. 0.835 at 60° F.

Now we find among the various wines produced in this country, that those from the Catawba, the Missouri, the Schuylkill, the Vevay, the Scuppernong, the Cape, and Herbemont grapes, rank the most important; and that of these, Catawba is the only one, the production of which has become an important branch of agricultural industry.

As the wines of all other grapes cultivated in this country resemble those produced from the Catawba in their chemical characteristics,—the essential difference being their aroma and boquet,—among those, then, which are produced from the Catawba, must we look for one suitable to our purposes as a menstruum.

We find that from the Catawba grape are made three varieties of wine; the dry, or still Catawba, the sparkling, or Catawba champagne, and the sweet, or ladies' wine. The two last are unfit for our purposes, from the excess of sugar, and the slight proportion of alcohol which they contain.

Therefore, to the dry or still wine must we look for the qualities we require in native wines, and to it have I confined my experiments.

ON GLYCYRRHIZA GLABRA.

By THOMAS P. JAMES, of Philadelphia.

The writer to whom was referred the question,—"What are the impediments, if any, to the extensive culture of the liquorice plant (Glycyrrhiza glabra,) in this country; and what essays have been made towards its introduction?"—respectfully submits, that the subject has claimed his attention, and he regrets to state that but few efforts have been made towards its extensive culture in this country, and that it has not received that due consideration which its importance demands. For some years attempts were made for its introduction by a nursery firm in the State of New York, who imported largely of the roots in a condition for cultivation, and desseminated them to some extent; but these laudable efforts met with general neglect, owing to the decided opposition of several journalists, who asserted that it could not succeed, and thus deterred agriculturists from instituting fair experiments.

That the plant will thrive and produce abundantly there can be no doubt, and the only impediment to its successful culture are the want of information among cultivators of its easy growth, great yield, and the immense profitableness of the crop. Some growers may be disinclined to make the attempt, on account of the time necessary to mature the crop. To secure the greatest yield, the roots should not be dug until the end of the third summer after the cuttings are planted; but a skilful farmer will, in the mean time, cultivate intervening surface crops, which alone will fully compensate him.

This country, from the suitableness of much of its soil, should not only produce sufficient for home consumption, but should be largely an exporter of the root.

Information should be widely disseminated of the precise mode of cultivation, together with its great remuneration to the agriculturist.

which a portion of one profession opposes the other, acts in a manner as a check and balance on each, and it may be that the community is thereby benefitted, though I can see no good reason to stimulate antagonism on that principle.

But on the other hand, who is there in our ranks, of even decent pretensions to pharmaceutical attainments, who does not number on his list of friends, physicians of eminence, practical, refined, conscientious, whole-souled men, who would protect him in health, business, and character; men with whom he can sympathize in professional feeling, tastes, habits, and disposition, with whom it is a pleasure to go hand in hand in relieving the wants of the sick and suffering; men who would scorn a bribe, and render gratuitous service tothe poor? How different is the treatment we receive at their hands when we make a mistake, go to them for explanations, or get their mistakes rectified; with what urbanity, politeness, and attention we are received; with what care are our suggestions weighed; how thankfully their errors are rectified, and with what obligations are we loaded at the bare idea of preventing what would otherwise have been a fatal mistake. And who is there in our ranks who would not do all in his power to make the lives of such men valuable, honorable, successful, and happy; drawing their attention to things of value professionally, to the imperfections of articles on which they were relying to arrest the progress of disease, correcting their errors, and giving them pharmaceutical information on subjects which they are uncertain or ignorant? And if such be our intercourse with many, let us endeavor to make it so with all with whom we have influence, remembering that a knowledge of our profession, an honest heart, and an accommodating disposition, with strict and careful attention to business, will insure us success with the public, and dignity and standing with the medical profession.

for a dangerous dose, without an explanation, give the reason, and return it. Let the physician and the patient take the trouble to get it corrected, which would be not only a mild, but a merited punishment to the former for writing thus, and the latter for employing such bunglers. This course, if generally adopted, would prove no doubt a positive check; at least it would serve to show what we consider things of doubtful meaning, and would certainly be a step in advance in point of etiquette to the treatment the apothecary usually gets from the physician, in case the mistake is on the side of the dispenser. If prescriptions were always accompanied by directions for their use, and the name of the prescriber and patient, it would obviate a great deal of unnecessary trouble and anxiety.

There is one point on which both physician and pharmacien have much cause for complaint and regret; I refer to the treatment to which both professions are exposed, even in cases where the greatest amount of skill is required, and the highest order of talent and qualification sought. In reference to the treatment we frequently receive at the hands of the public, of cheapening the services of the prescriber as well as the remedies he prescribes, I have known a man in affluent circumstances to price a prescription in half a dozen places, worth seventy-five cents, and with the remark that he had spent a great deal of money for medicine, and did not know as it did him much good, offer an apothecary twenty-five cents to put it up; and I doubt not that you will agree with the apothecary in his answer, that every one knew the value of his own life, and that in that case he thought it was as much as it was worth; if such people knew the danger of tempting men, being so completely in their power, and insuring to themselves the lowest grade of quality and qualification by such means, the practice would soon stop.

But as in machinery, so in medicine, there is a great amount of friction, and a great amount of power, perfection, and harmony. We are too apt to lose sight of the object in both professions, in the dust raised in their pursuit. Each business of life has its cares, anxieties, and troubles, and to a practical mind they all tend to develope the higher faculties in the man. No evil is without some corresponding good, and the very competition of which we complain, and the very mal-treatment with

pected that apothecaries should relinquish by far the greater and most remunerative part of their business to accommodate the mere whims of the medical profession. But on the other hand, how should we feel disposed towards a class of men whom *we thought* endeavoring to stimulate dishonorable competition, aiding quacks and mountebanks, to the prejudice of an educated profession; tampering with the lives of the community, trying to injure our business, and pour contempt upon our profession?

I am aware that this part of our subject is a matter of great speculation, and much might be spoken and written with very little profit, but my own convictions are clear that it is for the interest of no party interested in the subject, to separate these apparently incongruous elements from our business; the protection of the public requires that it should remain in the hands of responsible parties, and the sentiment of the public is decidedly adverse to their restriction; moreover, the articles put forth by qualified Pharmaceutists, are not usually nostrums; nostrums are seldom recommended by competent dispensers, and a well educated, honest pharmaceutist is seldom predisposed to use those means necessary to make a nostrum popular. I make no comment upon the plan of allowing a percentage to physicians on their prescriptions, and cheating it out of our customers, and which is now considered but one remove from robbery, and not much practiced.

As is usually the case in all matters of perplexity, especially in controversies between people of conflicting views, it is a great deal easier to find fault than to suggest remedies; but if I were to suggest a remedy for the defects in physicians' prescriptions, so perplexing to the apothecary, it would be to take a wholesale view of the subject; and as the physician gets two dollars for writing the prescription, and the pharmaceutist twelve and a half cents to prepare it, the physician should have sixteen times the trouble and responsibility to correct it; and I hold that on equitable principles it would be perfectly proper to hand it back to the customer, stating your reasons for returning it—that you cannot read it—that it is ambiguous—that you do not understand it—that there is a mistake in it; or if it calls

other pharmaceutical preparations, from the laboratories of men of doubtful reputation, and which are known to be wanting in the qualities necessary to give them remedial value? Then again, knowing the ignorance and carelessness of a large portion of dispensers, who though they do not stand well in our profession, yet occupy responsible situations, what guarantee has the physician that his prescriptions, will not fall into the hands of those who are deficient in the knowledge and judgment sufficient to select articles of known purity, and who are incompetent to compound them so as to insure their greatest remedial power?

It seems to me that the temptation is a very strong one, for a *good* physician to send his patients where he feels *sure* their wants will be properly supplied, even though he may pass by some equally deserving member of our profession, to the injury of his business. The only cause for censure that we can have, is when unfair means are used, or when the physician wilfully shuts his eyes to the qualifications of his nearest apothecary, for the benefit it may be of an acquaintance, no better qualified.

I must say, that were I a physician, I should be very careful into whose hands my prescriptions fell, and should feel it a sacred duty to my patients, to know who were, and who were not reliable. If physicians would take more pains to ascertain the qualifications of dispensers, it would soon make a manifest improvement in our profession, and in their success.

I have purposely avoided any allusion to the charge brought against us by medical men, of being prescribers, nostrum manufacturers, and venders of nostrums, or of aiding and abetting the mesmerizers, clairvoyants, spiritual doctors, Homœpathic doctors, and discoverers of new theories, sui generis and peculiar; for I hold that if we perform all the duties of our profession in an unexceptionable manner, so far as relates to our professional intercourse with physicians, our responsibilities to them are at an end; and as traders, following the established principles of trade, we should pay close attention to the channel into which it flows, and which pays the best remuneration. Now it so happens, that by far the greater part of medicine consumed, is not prescribed or recommended by physicians; and it cannot be ex-

ceive at the hands of the medical men in their vicinity. It often happens that physicians treat the professional qualifications of the apothecary with as little discrimination as the public, who are supposed to know little about it, and where quality, qualification and honesty are obliged to compete with fraud, ignorance and cheapness, a community is sure to suffer.

It has always seemed strange to me, that in such competition merit should go unrewarded, when it is manifestly for the advantage of both prescriber and patient to award a liberal support to high attainments in pharmaceutic skill. Pharmaceutists should be patronized for those articles which yield a profit, though not strictly within the scope of the dispensing department, and yet are often as cheap as inferior qualities of such goods sold by their competitors.

I have known a physician of eminence who went so far in his *instructions* to his patients, as to recommend a change of their apothecary without a shadow of reason for the change, so far as the apothecary was concerned, to receive his discharge by the family, who preferred to retain the services of the pharmaceutist rather than the doctor on the ground of professional qualifications.

We are not to suppose, because our intercourse with physicians presents so many objectionable features to us, that they have nothing to complain of in the management of our affairs, relating intimately or remotely to our intercourse with them. The statistics of our profession would show plainly, that a majority of dispensers in this country are incompetent properly to perform the duties intrusted to them. For this reason we are accountable, in a great measure, for the degree of contempt heaped upon us by them. Were we to change places with them, we should hardly be willing to have our prescriptions compounded in the manner and of the materials that too often falls to the lot of theirs, even when the most common articles are prescribed. What well educated pharmacien, were he a physician, would be willing, on his prescription, to have the Spirit of Minderi put up as frequently found in our stores, or the common article of cathartic pills, as found in many establishments considered quite respectable, or infusions made doubtful by using fluid extracts or concentrated tinctures to save trouble, instead of conforming to the officinal formula; or plasters and many

I have known a physician to write so badly that his chirography could not be made out, except by persons well acquainted with his writing; using terms not now in use for common articles, and referring to some work out of date for authority. I have known a physician to write for pulv. opii., when he intended pulv. ipecac. et opii.; and when the apothecaries' boy returned it to him to enquire what he intended, without looking at the prescription, return for answer that it was all right and to put it up, which was done, and administered with fatal consequences.

But if it is expected that apothecaries are to rectify the mistakes of physicians, then there is a class of prescriptions which are still more aggravating, as in cases where the dose to be administered of an active drug is much smaller than the division in the prescription calls for, and verbal directions are given to the patient to divide the pill or powder into four or six parts, and take one part as a dose, with a view of a pecuniary saving to the patient, in which case the apothecary would be justified in refusing to compound it until after an explanation.

In all these remarks, reference is had more particularly to our intercourse in large cities. In smaller towns the case is different, though not the less troublesome, the physician then becomes the customer who dispenses the medicine himself; consequently, his assortment is very much smaller and his perishable articles few and uncertain. Often a physician under such circumstances gives more attention to the price he pays, than the quality he gets, and excuses himself by saying that he cannot afford to pay much, as he gets nothing for the medicine, and that a cheaper article will do. It is not at all uncommon, that those who buy drugs of venders who sell the cheapest, depending upon their own imperfect judgment for quality rather than rely upon the more certain knowledge and reputation of a well educated and honest pharmaceutist, spend all their lives in combating diseases with comparatively powerless or exceedingly variable weapons.

Many a valuable life has been lost, occasioned by the meanness of physicians in procuring their remedial agents, and many a community is deprived of the valuable services of a good pharmaceutist on account of the niggardly treatment they re-

tentive study and better manipulation, than it does to acquire knowledge sufficient to obtain, in our medical schools, the degree of M. D., and it is almost an invariable rule that physicians who abandon the profession of medicine for that of pharmacy make the poorest apothecaries.

To a physician who writes uniformly correct prescriptions, and there are many such, it must seem strange that the apothecary should vary from the literal intention of the prescriber, or that he should misunderstand those intentions; and it is no matter of surprise to me that he should feel contempt for a class of men who unwarrantably tamper with the directions of the prescriber. Still, he would have more sympathy for us if he could see the multitude of perplexities to which we are exposed by the carelessness of his profession; and so painful has it become to many of our oldest and best dispensers, that they have retired, either from disgust or from clear nervous perplexity, from the dispensing department of their business; and it is not only a lamentable but a humiliating fact, that some of our ablest and best dispensers have given up the prescription business entirely, even when extensively patronized by the highest order of medical men, for the more lucrative, though less responsible and perplexing business in nostrums, fancy and toilet articles, &c. It is a fact not generally understood or believed by the medical profession, that the prescription department of an apothecary store in this country is the poorest and least remunerative part of their business, though it would seem by the deportment of many medical gentlemen in their intercourse with pharmaceutists, as though the apothecary was dependent on them for his daily bread.

I have known a physician who was in the habit of writing for Ext. Rhei. comp., and when he was enquired of as to what he intended, returned the answer, "let the apothecary put up what is directed."

I have known a physician to write plainly for an ounce of Pulv. Carb. Ammon., when he intended a drachm, and after the *accident* of its administration, enquire of the apothecary in a very offensive manner, what he meant by sending such a quantity of stuff to his patient, and asking to look at the prescription; when on discovering his error, coolly tear up the evidence of his guilt without offering the slightest apology.

apothecaries are as good judges of the professional qualifications of physicians, as physicians are of apothecaries. It has often happened to me, and I presume it has to many of our profession, that friends of the patient, in a state of great anxiety, have made earnest appeals to us for opinions as to the qualifications of their physician, and under circumstauces when a direct answer could scarcely be avoided; and I hold that in such cases, when sure that our opinions are correctly formed, we are bound to give them to our customers, whether adverse or favorable to the physician; for in the one case greater confidence is placed in the treatment, which is always beneficial to the patient; and in the other, who of us have not known of rapid recovery occasioned by a change of medical adviser and treatment?

If it be clearly the duty of pharmaceutists to endeavor to correct the mistakes of physicians—and it seems to me plain that it is our duty, for nine-tenth of their mistakes are corrected in the dispensing stores,—how great is the responsibility and judgment required, and how little is it appreciated by the public; and what is still more perplexing, the highly offensive bearing and thanklessness of many of our best medical men towards us, even in cases where they are wrong and highly censurable; and in cases of mistakes byt he apothecaries, how often is he treated with unnecessary severity and contempt.

It was remarked by a celebrated London surgeon, that he regarded his apothecary precisely in the same light that he did the mechanic who sharpened his instruments. If the remark was intended as a compliment to his instrument-maker, it does very well, for a poor instrument might well be considered second only to a poor, unreliable dose; but the common interpretation of this often-quoted phrase is but an expression of contempt for the profession of pharmacy; and this false sentiment, which has spread so widely in the medical profession, has done more to retard the advancement of pharmacy, and weaken the weapons with which the medical profession combat diseases, than any other weakness of theirs, or any want of dignity or harmony in ours.

It is a fact well known to our profession, that to educate a competent dispenser, who can pass a good examination at our schools of pharmacy, requires more time, closer application, at-

cessful interpretation of a prescription wrongly written, but compounded according to the intention of the prescriber, tends to the most serious mistakes, by confirming the physician in his practice of writing carelessly or erroneously; for, if the physician writes wrong, and it is correctly compounded, he knowing nothing about it becomes confirmed in the error, and his next prescription falling into the hands of one who is incompetent to correct his mistakes, being compounded literally, is administered with fatal consequences.

I have known a physician, of the first standing and very extensive practice, who became accustomed to write for ipecacuanha, *ipec.* and made the *I* so nearly to resemble an O, and the *e c* of so doubtful characters, that it bore a closer resemblance to opii than it did to ipec.; the consequence was, that those who were accustomed to compound his presciptions knew his intention; but a time came when twenty grains of pulverized opium was put up and administered as an emetic on his prescription.

Our first duty, as conscientious pharmaceutists, is to have a thorough knowledge of our profession; then, as occupying an important position, and as co-laborers in the benefits to be derived from medical science, our duty is clearly to protect the public, and do the best that can be done for our customers who confide in us, in our department, equally with the physician in his. I hold that we have no right to jeopardize the health or life of the patient by any doubtful interpretation of a prescription, or even put up a dangerous prescription correctly written when we are sure that we know the dangerous consequences better than the prescriber.

We justify a physician when he objects, on reasonable grounds, to his patient getting his medicines compounded by an ignorant or irresponsible apothecary, even though he may injure the reputation of the apothecary with his customers; so I hold it justifiable to refuse compounding a prescription where we are sure it would prove fatal, or even dangerous, to the patient, even though it might compromise the physician.

It is not uncommon or improper for a physician, on reasonable grounds, to recommend a change of apothecaries, and why should it under similar circumstances be considered wrong for apothecaries to advise a change of physician? For I hold that

any facts at all distinguishing oxygenated oils from one another; it is possible that Greville Williams may have pointed out the direction in which we have to look for distinguishing characteristics.

PROFESSIONAL INTERCOURSE BETWEEN THE APOTHECARY AND PHYSICIAN.

By Samuel M. Colcord, of Boston.

The subject referred to me at our last meeting, "Professional intercourse between the Apothecary and Physician," is a subject upon which pharmaceutists are very much perplexed, each having an opinion peculiar to himself, varying according to the education and temperament of the individual.

Upon a subject so complicated in its nature it is very difficult to define a rule for constant practice, and yet so important that, as soon as practicable, it seems absolutely necessary that some general understanding should be observed among us in regard to our intercourse with physicians and customers.

Our files of physicians' prescriptions now present a sad compilation of ignorance, carelessness, and even recklessness, in all the forms of bad Latin, bad spelling, contractions, bad writing, unofficinal names, terms of doubtful meaning, terms not now in use, mixtures of incompatibles, and often prescribed in dangerous doses; and it often happens that bits of dirty paper and card badly marked are handed to the apothecary as prescriptions, who is expected to compound them at the moment without hesitation, though the person who made the marks could not interpret them himself a week after they were made; and the apothecaries who receive them, being unable at all times to decipher their meaning, under great embarrassment, are tempted to take liberties and make interpretations unauthorized by the language, which, however justifiable in the hands of adepts, is a very dangerous precedent for those of ordinary qualification and tyros. The suc-

(*c.*) Water—practicable with the heavier oils, or those which by this treatment are readily resolved into a light and heavy portion; afterwards treatment on paper.

(*d.*) Saponification after distillation—merely to prove presence of fat, though (*a*) usually sufficient.

II. *Alcohol*, (*a.*) Treatment with water—good results, when proportion of alcohol is considerable.

(*b.*) With olive oil—better results for smaller proportions.

(*c.*) With chloride of calcium—good results, but does not indicate the presence of water.

(*d.*) With acetate of potassa and afterwards sulphuric acid—very good for the detection of the adulteration, and also its per centage.

(*e.*) With platina black—applicable in few cases.

(*f.*) Distillation from the waterbath—more tedious, but best results.

III. *So-called artificial oils.*—Only one case on record (bitter almond and nitrobenzole); treatment with caustic potassa very practicable.

IV. *Other essential oils*, (1,) non-oxygenated oils.

(*a.*) Production of terpin—applicable for caoutchine, petroleum and oil of amber.

(*b.*) Polorized light—said to be applicable for oil of tar, &c.

2. Treatment with sulphuret of lead—promising, but doubtful yet.

3. With nitroprusside of copper—excellent for the detection of carbohydrogens in oxygenated oils.

The foregoing investigations comprise the most prominent methods for the detection of adulterations of essential oils, with one exception: that of iodine. I could not find time to complete my researches on this test, or finish them sufficiently to present the results to the Association. At my earliest opportunity I intend to take them up, and will report my results if they should prove sufficiently interesting. I shall also not lose sight of the ozonisation of some oils and their behaviour towards certain chemical compounds like sulphuret of lead, and if I should succeed to become acquainted with facts tending to prove adulterations, I shall endeavor to lay them before the Association at the next meeting. As yet we know of hardly

with those most frequently met with in such a sophisticated state,—Oleum Tanaceti, Hedeomæ, Monardæ, Lavandulæ, Chenopodii, Carvi.

As, besides the rectified oils, I have particularly examined the crude or old oils of our trade, I have sometimes observed a slight difference in their coloration from that of Heppe's experiments who almost exclusively made the pure rectified products the subject of his researches. Where such a difference occurred, I have stated it after his observation. Of the oils mentioned in the above list, the following were only examined by Mr. Heppe: Oleum Anethi, Calami, Cumini, Cynæ, Majoranæ, Millefolii, Rutæ, Salviæ, Serpylli, while I have extended my experiments to the following oils, which have not been examined by him, viz: Oleum Chenopodii, Gaultheriæ, Hedomæ, Limonis and Monardæ.

In what manner the reaction takes place between the nitroprusside and the oxygenated oil, remains to be explained. Mr. Heppe thinks it is owing to an oxydation of the former by the oxygenated constituents of the latter; but if this is the sole cause, why does the oxydation not take place with resinified carbohydrogens which appear either not at all affected by the nitroprusside, or only after a considerable time, and in the latter case still prevent its action on the oxygenated oils? And why is the reaction retarded in the case of oil of lemon? Another curious question presents itself. We know that most of the oxygenated oils contain a carbohydrogen, in many cases isomeric with oil of turpentine; why is it that this is unable to prevent the reaction, while the addition of one, nay even one quarter per cent. of oil of turpentine possesses this power? The reflections on these circumstances would doubtless be as interesting, as researches would prove, undertaken with a view to solve this mystery. At present we are only able to state facts, incoherent as they may appear.

To recapitulate the discussed methods for the detection of adulterations of essential oils, the following results present themselves:

I. *Fats, &c.* (*a.*) Permanent greasy stain on paper—decisive; sometimes a previous distillation may be advisable.

(*b.*) Treatment with alcohol—uncertain for small quantities of fats.

NAME.	ORIGINAL COLOR.	COLOR AFTER THE ACTION OF NITROPRUSSIDE.
Oleum Absynthii.	Yellowish brown.	Dark brown.
"	Dark greenish brown	Darker, nearly black.
Anethi.	Light reddish yellow	At first colorless, then yellowish and brown yellow.
Anisi.	Pale yellow.	Darker yellow.
" stellati.	Light yellow.	Dark wine yellow.
Bergamottæ.	Greenish yellow.	Dark yellow to brownish red.
"	Brownish yellow, old and thick.	Deep brown.
Cajeput.	Colorless.	Brownish yellow.
"	Pale green.	Olive green.
Calami.	Yellow.	Brownish to dark red brown.
Carvi.	Colorless.	Yellow.
"	Pale wine yellow.	Deep wine yellow, remains cloudy for a considerable time, re-assumes its transparency very slowly.
Caryophylli.	Nearly colorless, or yellow and thick.	Pale pink, violet, cherry red to a deep cherry red without transparency.
"	Brownish yellow (the crude oil.)	Through several shades of red, to an opaque reddish brown.
Cassiæ.	Yellowish, or brown yellow.	Brownish, or hyacinthine red to dark brown red.
Chenopodii.	Reddish yellow.	Immediately brownish red.
Cumini.	Faint yellowish.	Brownish yellow to deep brown yellow.
Cynæ.	Light yellow.	Deep yellow.
Fœniculi.	Colorless.	Brownish yellow.
"	Nearly colorless.	Through yellow and brown yellow, at last reddish brown.
Gaultheriæ.	Wine yellow.	Brown yellow to brown.
Hedeomæ.	Colorless.	Yellow.
Lavandulæ.	Pale yellow.	Wine yellow to brown yellow.
"	Yellow.	Brown yellow, at last reddish brown.
Limonis.	Nearly colorless.	A deeper yellowish color after 10 or 15 seconds boiling.
"	Yellow.	Almost instantly colorless, the yellow color re-appears after 10 or 15 seconds boiling.
Majoranæ.	Colorless.	Yellowish to brownish yellow.
Melissæ.	Yellow.	Deep wine yellow.
Menthæ piperitæ.	Colorless.	Yellowish to brownish yellow.
" "	Pale yellow (crude.)	Brownish yellow to brown.
" crispæ German	Colorless.	Wine yellow.
" sativæ Amer.	Yellowish red (crude)	Deep brown red.
Millefolii.	Limpid, blue, lighter than Ol. Matricariæ Cham.	At first pale blue, afterwards dark green.
Monardæ.	Yellowish.	Colorless, through various shades of yellowish green to greenish brown, at last almost black. Very easily affected.
Rutæ.	Pale yellow.	Brown yellow.
Salviæ.	Pale yellow.	Wine yellow to brown yellow.
Sassafras.	Colorless, yellow or yellowish brown.	Yellow, yellowish brown to dark brown.
Serpylli.	Faint yellow.	Light to dark brown yellow.
Tanaceti.	Light yellow.	Reddish brown.
Valerianæ.	Pale greenish (fresh.)	Brown yellow.
"	Light brown yellow, (old.)	Deep brown yellow.

The *Oleum Origani* as it is met with in our commerce is of a red color; it is an oxygenated oil, and ought like the oils of other labiatæ, to which family origanum belongs, be changed by the influence of nitroprusside of copper; of five different specimens which I examined, even the most prolonged boiling did not produce any change, it is a mixture with oil of turpentine. Of the other oxygenated oils I have found the following sometimes adulterated with turpentine; they are,—commencing

in the plants from which we obtain them, and we shall therefore consider the influence of the nitroprusside of copper confined to those essential oils which are vegetable educts.

Of the nonoxygenated oils, I have tested oleum aurant. dulc., (the oil of the sweet orange peel), ol. juniperi, sabinæ and terebinthinæ, Mr. Heppe, besides those mentioned, petroleum, crude and rectified, ol. aurant. amar., and ol. flor. aurant. They all remain unaltered after the application of the test, but a crude German and a very old French oil of turpentine were found by Heppe to assume a light brownish color, while I observed that two samples of American oil of turpentine changed to a greenish yellow, but prevented, when added to an oxygenated oil, a reaction between this latter and nitroprusside. A very old thick oil of juniper likewise altered its color from yellow to a faint greenish-brown; pale and limpid oil of juniper always remained unaltered.

The results with the oxygenated oils chiefly differ in their assumed color; and this change, as might be expected, is somewhat modified by their original color. The observations made by Heppe and myself I have deemed expedient to collect in the following table, omitting there to mention their behaviour when mixed with turpentine or any other nonoxygenated oil, which is alike in all cases, as a change of color does not take place unless the boiling is continued for a considerable time, long enough to evaporate a sufficient quantity of the carbohydrogen, so that the resulting surplus of nitroprusside of copper may be enabled to act on the oxygenated oil.

the test is not so variable, and not of that constant sameness that we meet with in the settled powder, though several oils during the process are likewise gradually changed to nearly black.

The nonoxygenated oils, as far as their color is concerned, are not influenced by nitroprusside of copper, and their presence in an oxygenated oil prevents a certain portion of the nitroprusside from acting on the latter. This certain portion, of course, varies in proportion with the quantity of the carbohydrogen, and a larger amount produces in the oxygenated oil the usual change. In order to detect even a slight adulteration of the nature spoken of, it is therefore necessary to use a very small quantity of the reagent to a comparatively large amount of oil; the test may, perhaps, with the exception of oil of lemon, in all cases be relied on, as the reaction between the oil and the nitroprusside is consummated almost in an instant, while after cooling the change of the color will be clearly observable. Some difficulty I have experienced with oil of lemon, which, though closely allied to the carbohydrogens, is an oxygenated oil; but from its behaviour towards nitroprusside, as well as to nitric acid and alcohol and hydrochloric acid gas, I am almost inclined to look upon it as a link connecting the two classes of essential oils, containing and not containing oxygen. By keeping it boiling for five seconds with the nitroprusside of copper, no change could be observed; and it was only after repeating it once or twice, that a change of the color could be distinctly noticed; while on the other hand I had the satisfaction to find that an addition of one per cent. of oil of turpentine prevented the change even after the repetition. Therefore, although, a reaction does not take place so decidedly, still an admixture of turpentine may be satisfactorily detected. But not so with oil of bitter almonds, which is not influenced by the reagent, Mr. Heppe seems disposed to think, because, like oil of mustard, it could hardly be classed with the essential oils on account of its peculiar chemical nature. The same objection might be raised against the oils of gaultheria, cassia, caryophylla, valerian, &c., which certainly have a chemical nature peculiar to themselves; but we will grant the above objection on the ground that the oils of bitter almonds, mustard, &c., are products, not educts; that they do not pre-exist

conds, (I never boil over five seconds), after which the test glass is set aside to cool and settle, when the color of the powder and the supernatant oil may be observed.

For the observation of the color of the settled powder, Mr. Heppe recommends to examine it by holding the test glass up to a good day-light and by looking at it through a magnifying glass. He considers the change of color very important, and indeed it may serve somewhat as a corroborating proof to the examination of the essential oils; but the coloration peculiar to the latter alters the color of the powder materially, even rectified and colorless oils darkening it considerably, while this is far more the case with the oils as they occur in our market, of which few are colorless; two samples of the same oil even from different sources but rarely agree in their shade of color, and in proportion with this difference the shade of the precipitate is likewise variable, a reliance on it therefore being apt to mislead, besides the difficulty of recognising the identical color of so small a body, even with the assistance of the magnifying lens. If the nitroprusside, after being shaken with the oil, is allowed to settle, the observation of its color compared with its shade after boiling may serve as a slight evidence for the purity or adulteration of the oil. I have endeavored to dilute the nitroprusside of copper for the better recognition of its color with some white powder, which of course must be of nearly the same specific gravity, and without any chemical influence on either the oil or the nitroprusside; my experiments, however, have not been very successful.

All these difficulties, however, amount to very little or nothing when the oils examined are very limpid, colorless and not resinified. But, for more practical purposes and in view of the supply of essential oils in our commerce, we had better look aside from the color of the reagent, and in lieu thereof closely observe the color of the supernatant oil, the change of which is very characteristic and may be easily compared with another portion of untested oil of the same sample. While the color of the nitroprusside, under the influence of an oxygenated oil, is gradually changed from its original through the intermediate shades to black; the color of the oil acquired by the influence of

and drying it had become grey with a reddish hue. I then prepared, first, nitroprusside of sodium, which I obtained in its characteristic red crystals; after repeated crystallizations, they were precipitated by sulphate of copper and furnished a precipitate of the same reddish grey color. Afterwards I varied the quantity of nitric acid, but with no better result. The cause of my inability to prepare this copper compound with a greyish green or a light green color, as demanded by all authorities which I consulted, or whether this is identical with that obtained by me, I am not prepared to assert, though I cannot perceive that I have neglected any of the precautions given in Wittstein's process. The precipitate, whether by itself suspended in water or previously decomposed with caustic potassa to the soluble nitroprusside of potassium, always gave that beautiful purple reaction on the addition of a drop of sulphuret of ammonium; I was therefore satisfied that my preparation was nitroprusside of copper, and I proceeded to experimenting. It was natural to suppose that by its reaction with the essential oils I might obtain the nitroprusside of a similar coloration as that observed by Heppe; but such was not the case. In all instances, as soon as the powder became soaked with the oil, it assumed a darker tinge, which did not appear to have been altered after the boiling with turpentine or another of the carbohydrogens, while it was rendered darker, nearly black, after the influence of an oxygenated oil. This observation, however, corroborated the statement of Heppe, that the deeper green hue of the nitroprusside, after its having been boiled with á nonoxygenated oil, is due merely to the absorption of the oil, and not to a decomposition of the nitroprusside.

The manipulation for examining the essential oils with Heppe's test, is as follows:

A rather narrow test glass, three or four inches in length, is filled to one-fourth, never over one-third, with the oil; a small quantity of nitroprusside of copper not larger than a pin's head, and well dried and rubbed to a very fine powder is added, the whole well shaken and then heated to boiling over a spirit lamp; the test glass is slightly inclined to prevent concussion, and an eventual loss thereby, and the boiling continued for a few se-

lead paper, but a perceptible discoloration took place after the addition of little turpentine.

My observations with the other four oils mentioned as discoloring the prepared paper, have been rather singular, and a little surprising to me. The same sample of oil of rosemary produced the discoloration several times, but under, as near as possible, the same circumstances failed twice. A sample of rectified oil of peppermint always discolored the paper, while samples of the crude oils of peppermint, lavender, and amber, entirely or partly failed to do so. I am unable to assign any plausible cause for these failures, as I have tried to perform the experiments as near alike as possible; with none of the other oils mentioned above have I observed any similar behaviour, though to each of them the test had been applied several times. These circumstances I consider worthy of investigation, and it shall be my endeavor to clear up the contradictions, or at least find out the peculiar rules to be observed for obtaining always the same results.

(*c.*) *Detection of nonoxygenated in oxygenated oils by nitroprusside of copper.*—The most important discovery for the detection of such adulterations, is that of Mr. Heppe, his observations with reference to the behaviour of the essential oils toward nitroprusside of copper, have made us acquainted withsuch interesting results that they deserve general attention.

Heppe prepares the nitroprusside of copper according to Wittstein's directions, by stirring 10 oz. of nitric acid specific gravity=1.20 into the powder of 4 oz. ferrocyanuret of potassium, and digesting afterwards in a water bath, until a filtered sample of the solution is precipitated by a salt of protoxide of iron with a slate instead of with a blue color, when the liquid is diluted with twice its volume of water, neutralized with carbonate of soda, heated to the boiling point, filtered and precipitated with sulphate of copper; the greenish-grey powder is then washed and well dried in a medium temperature. On following this process, I obtained a precipitate of a grey color, but so little tinged with green that I resolved to prepare a considerable quantity at once, but with no better result so far as the color was concerned; the precipitate was of a flesh color, but, after washing

readiness with which polarized light is affected by turpentine and similar oils, it might have been expected that their presence in a neutral body could thus be demonstrated.

(*b.*) *Detection of adulterations by sulphuret of lead.*—Greville Williams (Philosoph. Magaz., June, 1853,) has observed that some volatile oils have the property of oxydizing the black sulphuret of lead to the white sulphate, and this behaviour was proposed by him as a test for their detection in oils which are unable to cause such a change. Overbeck, in Archiv der Pharmacie, August, 1854, adds several oils to the list published by Williams.

The mode of proceeding is to immerse a piece of paper in a solution of acetate of lead, and to expose it afterwards to the vapors of sulphuretted hydrogen or sulphuret of ammonium, until it has acquired an even, dark-brown coloration, when it is ready for use; a drop of the oil is then put on the paper, and evaporated again by a moderate heat near a stove or a fire. By this experiment, the spot from where the oil has evaporated will become discolored if any of the following oils had been used; turpentine, peppermint, lavender, amber, rosemary,—while no discoloration takes place from the oils of anise, bergamot, cajeput, cassia, juniper, lemon, orange-peel, savin, and origanum.

All the commercial samples of the latter oil, however, produced a strong discoloration of the paper from which the presence of turpentine in origanum may be inferred. Repeating the experiments with oil of turpentine, I found it best to have the paper a little damp, when in all cases, the color of the paper from a brownish black was readily changed to a light brown, while when the paper had been dry, the result was not so decided, and even failed entirely in one instance. With the oils producing no discoloration, my experiments were successful, producing, with the exception of origanum, no change of color, which easily took place after they had been mixed with about five per cent. of turpentine; according to Williams, even one per cent may be detected, if the experiment is repeated two or three times. Of similar behaviour, I found the oils of Absynth, Chenopodium, Gaultheria, Melissa, Pennyroyal, Sassafras, and Valerian. They did not change the color of the sulphuret of

vine, &c., are adulterated with a cheaper oil of the same class, particularly with oil of turpentine; and as they are all of a similar behaviour towards a number of reagents, it is difficult to detect such a falsification. The discovery of Greville Williams, however, appears to have pointed out a way which we shall consider below.

Though some camphenes do not produce a solid combination with hydrochloric acid, like oil of turpentine, still this behaviour cannot be used as a test for the detection of turpentine, unless the same be present in considerable quantity; the reason for this is, that the hydrochlorate of oil of turpentine remains in solution in the liquid products, and thus escapes recognition. On the other hand, the longer or shorter time required by the various camphenes for the production of terpin, does not afford the means to easily distinguish the presence of one oil in another, inasmuch as under otherwise similar circumstances American oil of turpentine requires considerable time for its separation, while according to Flueckiger, the addition of water to the mixture of the oil, alcohol, and nitric acid, favors, in all cases, its rapid formation.

Those pyroproducts, caoutchine, oil of amber and petroleum, have been found by Flueckiger to deposit crystallized terpin in a few days after they had been mixed with any of the camphenes. His mode of treatment is to mix the suspected oil with half its measure of a mixture of one part alcohol, two nitric acid, and two of water, and shake the whole frequently; in two or three days crystals of terpin will make their appearance, if oil of turpentine had been present. Experimenting with oil of amber, I found the whole procedure very simple, and every way calculated to detect an adulteration of five per cent of turpentine, or the same quantity of oil of lemon. Flueckiger states, that the presence of even one per cent. of turpentine can by this method be proved.

Pure tar-oil has no effect upon polarized light, which is deviated either to the right or left by all camphenes. Upon this behaviour has Berthelot founded a way to discover a fraudulent admixture of oil of turpentine to any of the tar-oils. I have not been able to push my experiments in this direction, and cannot, therefore, speak from my own experience, though from the

attention, from the fact of its being fraudulently mixed with the genuine oil, a practice which is the more objectionable, as it was proved to be highly poisonous, which is not the case with the true oil deprived of the hydrocyanic acid.

After further investigations, I can highly recommend the process for the detection of the sophistication, which was proposed by me, and to which I have only to add the precaution of first examining the caustic potassa intended to be used. A piece of it is to be heated with pure alcohol until the greater part is evaporated, when on diluting with distilled water it ought to furnish a clear solution to fit it for an accurate experiment with the oil of almonds; should a turbid solution be the result, the potassa must be rejected. The examination of the oil is very simple; twenty or thirty drops are dissolved in about two drachms of pure alcohol; to this from ten to fifteen grains of caustic potassa are added, and the whole boiled briskly over an alcohol flame, and evaporated when it is dissolved in about one ounce distilled water. Thus treated, the pure oil will furnish a clear solution, while that contaminated with nitro-benzole shows a turbidity which increases in density with the proportion of the contamination. An adulteration of two per cent is in this way readily recognized, and even one per cent. of nitro-benzole produces a still discernible cloudiness. To corroborate such a suspicion, if deemed necessary, the product of another experiment may be dissolved in only two drachms instead of one ounce of distilled water, which quantity is quite sufficient to keep the benzoate of potassa and the excess of caustic potassa in solution, while the density of the turbidness will be increased fourfold.

Thus it is without any difficulty that the *fact* of the adulteration may be established, though of its percentage I can as yet only judge by the density of the cloudiness, and the amount of precipitate after it has settled. For all practical purposes this is already sufficient, as all oil of bitter almonds thus sophisticated, ought to be rejected if it was intended for medicinal or culinary purposes; it is only fit to be used in perfumery.

4. *Adulterations with other essential oils.*

(*a.*) *Adulteration of non-oxygenated oils with camphenes.*— It is doubtless of frequent occurrence that oils like juniper, sa-

of the platina black, are converted into more or less volatile acids, which would likewise redden litmus-paper; he instances oil of turpentine, fusel oil, and particularly oil of valerian, the valerol of which is converted into valerianic and carbonic acids.

A very accurate method for the detection of alcohol, and especially applicable for the discovery of very small quantities, has been proposed by Silva (Journ. de Pharm. and de Chim., March, 1853, 212.) His method is to distil the suspected oil from a water bath, by the heat of which, chiefly, alcohol is vaporized; the distillate is then treated with acetate of potassa and sulphuric acid as stated above. The object is to obtain the alcohol which may be present, contaminated with as little oil as possible, so as to make the subsequent tests easier and plainer. The whole process, though very accurate, is too laborious for the practical purposes of the druggist or pharmaceutist; "saturation" of the oil with acetate of potassa, omitting the distillation but applying a moderate heat, will answer all purposes and give results sufficiently accurate.

The presence of alcohol in oil of bitter almonds may be proved, and its proportion estimated in the same way as in other essential oils, but if the object is merely to prove the sophistication without regard to its percentage, Redwood's method is the quickest, gives good results, and is therefore very acceptable; it consists in the treatment of the suspected oil with nitric acid, at a medium temperature, when the evolution of nitrous acid fumes will denote the presence of alcohol; the pure oil does not occasion this reaction.

3. *Adulterations with so-called Artificial Oils.*—I have stated before, that if we should be able to prepare the essential oils artificially, we shall most likely be unable, desirable though it would be, to distinguish them from the natural products; in fact they could be called artificial oils only if their physical and chemical properties were identical with the same of those essential oils whose artificial counterpart they are intended to be. But a number of more or less oil-like liquids have appeared in commerce which are distinguished by the name of oils, such as oil of apples, pears, pineapples, bananas, cognac, &c.; they are ethers, and do not even pretend to be natural products. But nitrobenzole, the so-called artificial oil of bitter almonds claims our

beneath the oil; while if the quantity was too small to dissolve it, the chloride of calcium will merely begin to crumble to powder from the edges; this crumbling or dissolving is a sure sign of the presence of alcohol or of water, for water acts in precisely the same way, and it may be present if no rectification over chloride of calcium had taken place. A case in point was a lot of oil of sassafras, perfectly clear and transparent when received, but after standing undisturbed for about a month, it had separated into six different strata, distinguishable by their specific gravity as well as by their color, the heaviest stratum being colorless, while the lightest one contained nearly the whole of the coloring matter. Chloride of calcium, remained undisturbed in the lowest stratum; by all others it was dissolved; however, the solvent proved to be not alcohol, but water. To prove this beyond doubt, a portion of the oil was agitated with dry acetate of potassa, and after the separation of the solution from the supernatant oil, the former was mixed with sulphuric acid and heated, when no smell of acetic ether was emitted.

Acetate of potassa is therefore preferable to chloride of calcium, as by one and the same treatment we are enabled to make a distinction between the fraudulent admixture of alcohol, and a contamination with water, which the oil may contain through carelessness. The use of this salt, which ought always to be employed in as dry a state as possible, was proposed by Bernoulli. The percentage of the water or alcohol is found by the difference between the measure or weight of the oil before and after the treatment, for which purpose, in order to extract all this foreign liquid from the oil, it ought to be saturated with acetate of potassa, and, to promote its solution, slightly heated. If only the nature of the contamination is to be found out, such a course need not be pursued.

Oberdoerffer, of Hamburg, (Archiv der Pharmacie, lxxiii. 1,) recommended the transformation of alcohol into acetic acid by means of platina black, and recognizing the generated acid by its reddening a strip of moistened litmus-paper suspended above the platina, which may also be washed with water to be tested in the usual way for the acetic acid. But Professor Buchner has shown (Neues Repertorium ii. 15,) that this method can be applicable to but few oils, a great many of which, by the influence

ployed merely for the purpose of congealing volatile oils at lower temperature, they will, after the above treatment, be left behind, usually in a nearly pure state, and may be recognized by their general physical qualities, and by their producing upon paper a greasy stain when melted.

When it is desirable to *purify* a small quantity of volatile oil from the fat it contains, the process of M. Curieux, republished in the Amer. Journ. Pharm., 1858, 399, for the purification of the essential oils from resin, is likewise applicable for this purpose, the fixed oil being retained upon the filter by the influence of the borax. Contaminated oil of turpentine and juniper were thus freed of all fixed matter. But though I have not experimented much in this direction, I doubt the propriety of treating by M. Curieux's method such essential oils, which are readily separated in two layers of different specific gravity, on being shaken with water.

2. *Adulterations with Alcohol.*—Alcohol appears more frequently than fixed oils, to be used for adulterating essential oils; it has the advantage, before other sophistications, not to impart any smell of its own, but merely diluting the original odor of the oil, and not materially to alter the specific gravity of those oils which are lighter than water. The most handy tests for the detection of this dilution, are shaking the oils either with water or a fixed oil. The water seizes on the alcohol and separates the oil, which now occupies a smaller space than before, thereby allowing to judge approximately of the percentage of the alcohol. Olive, or any other fixed oil, on the contrary, acts as a solvent of the volatile oil, while a solution of this latter in alcohol is separated. By the use of a fixed oil, more accurate results are generally obtained than in the former way, and a larger proportion, say about ten per cent. of alcohol and upwards, may thus be very conveniently and accurately determined. After frequent agitation for a few minutes, the two liquids will readily separate, the alcohol having parted with nearly the whole quantity of the essential oil.

Borsarelli's method is applicable for many cases; it consists in the addition of a small quantity of fused chloride of calcium to the suspected oil; the chloride will dissolve in the alcohol if a sufficient quantity was present, and form a separate stratum

of it with 8 or 10 times its quantity of water until a seperation takes place; the oil floating on the surface of the water is not the fat oil entirely separated from the volatile oil, but the latter usually separates into two of its components, the lighter of which together with the fixed oil rises above the water, or else the fixed oil contains some volatile oil in solution, not more than enough to keep it floating. The oil sinking to the bottom is free of fat oil. To prove the presence of the fixed oil in that part remaining on the surface, a single drop dropped on paper will give unmistakeable evidence. In this way I have satisfactorily demonstrated a contamination of about 1 per cent. in oil of cassia and oil of cloves, a quantity so small that a drop of the unseparated oil will leave a mark upon paper which can hardly be suspected as a grease spot. The object of this method is simply to concentrate the whole of the fat in a smaller bulk, and from the light specific gravity of the fixed oils, this process is applicable only to the heavier volatile oils.

The common oil of juniper chiefly intended for external use, as met with in commerce, is sometimes resinified to such a degree that it has become a thick fluid of the consistency of olive oil. In this state I have found it twice adulterated with a fat oil which fact was proved by distilling ½ oz. with 8 oz. water, until about one half remained in the retort. The residue chiefly consisted, besides water, of resin and fixed oil, with very little of the volatile oil. By separating the oleoresinous part from the water, and washing it with alcohol for the removal of the resin, the fixed oil could be readily recognized by its greasy touch, its permanent stain upon paper, and its saponification with alkalies.

Though more troublesome and tedious, this latter treatment is advisable whenever the proportion of fat, spermaceti or wax, is small, or when the volatile oil itself has assumed a thicker consistence by oxydation; even traces of such frauds may thus be detected. The oleo-resinous residue has retained the greater part of the coloring matter of the oil, but this does not prevent its after-treatment, the coloring matter being removed along with the resin, and cannot interfere with the process of saponification if this should be deemed necessary. Wax and spermaceti, if present in small proportion, with a large quantity of fixed oil, cannot be easily separated from the latter; they will simply increase the amount of fat; but if they have been em-

1. *Adulteration with fats and similar substances.*—Falsifications of this sort do not appear to be practised very frequently, nevertheless it is necessary to be on the look-out for them. Some of the dearer oils, especially those which at an ordinary temperature are not very limpid or even thick, and of the consistency of butter, are liable to such adulterations; also, those which by exposure to the atmosphere absorb oxygen, and by resinification lose their original limpidity, on account of which loss, however, they may perhaps not be rendered entirely unfit for those purposes to which they are usually applied. One of the chief properties of the volatile oils is their producing a greasy spot on paper, which on exposure to the air, or quicker to a warm place, disappears without leaving any stain, and this volatility is the preliminary experiment to which the volatile oils of commerce ought to be subjected; if adulterated with fats, they are sure to leave a grease spot behind, which, however, must not be confounded with the stain left behind by partly resinified oils. By a little practice the two can be readily distinguished from their appearance; grease always leaves upon paper a well defined mark of even transparency, and after its complete absorption has not imparted any gloss aside from that which the paper already possessed; the resin, though in an oily solution it will partly penetrate the paper, leaves a mark devoid of transparency, or nearly so, and possessing a gloss distinct from that of the paper.

Most of the volatile oils are soluble in three or four times their quantity of 85 per cent. alcohol; if a fat was present, the solution will be turbid and gradually separate the fat oil. This, however, is not invariably the case; very small quantities of fats may of themselves be soluble in so large a proportion of alcohol, while the interposition of the volatile oils considerably increases their solubility. This method is therefore inexact, and the absence of a separation of oil from the alcoholic solution merely indicates the absence of more than a certain proportion of fat oil; this proportion, however, is very variable; in some oils about three per cent. may be easily detected, while others barely show the presence of 5 per cent.

Small quantities of fat oils may be conveniently detected in volatile oils heavier than water, by shaking about half a drachm

substitute for the natural article, and in such cases the desirableness of a means for distinguishing the artificial and natural products does not arise from the fear of obtaining a spurious article; it is not merely a question as to quality, but it would be a pecuniary question, as from the abundance of the articles and the simplicity of their decomposition to the oils of mustard and of cinnamon, we have reason to believe that some artificial oils might be produced at an expense far below the price which the natural oils often command in the market.

These three mentioned above, are, I believe, until the present time, the only oils which have been produced in an artificial way, but from the progress of chemistry we may reasonably expect that sooner or later many may be prepared in the chemical laboratory. Other liquids of an oily nature have been discovered which only resemble in odor some volatile oils. An admixture or a substitution of such a product is a fraud which we ought to be able to find out, and in this direction we have to keep a watchful eye whenever a discovery of such a nature is made as to promise a cheaper substitute for an expensive article. Accidentally a case of this kind has come to my notice, and I have reported about it, and the means of detecting the falsification of oil of bitter almonds with nitrobenzole, in the Am. Jour. Pharm. 1857, 544. I shall have a few remarks to make on this subject in its proper place.

We have so far spoken of the volatile oils and the probability of the detection of spurious admixtures of other oils and substances of a similar nature. There are, however, sometimes adulterations practised with substances of entirely different characters. Fat oils, spermaceti, even wax, have been made use of to falsify volatile oils, but a more common intentional falsification of this class is alcohol.

Different as the chemical properties of these bodies are from those of the volatile oils, there is nevertheless sometimes a little difficulty experienced in proving such a fraudulent contamination, and great care and nicety in manipulating is to be recommended in all cases, when experiments for their detection are undertaken.

After these general remarks, we will proceed to the consideration of the most important methods for the detection of adulterations of volatile oils.

Chemical compounds which we prepare in the crucible or the retort, which we crystallize in their various unchanging forms, or which we precipitate from solutions, we have surer means of examining into their purity and obtaining them invariably with the same properties; but these volatile products of vegetable life we have to accept, as they are furnished us by nature, relying chiefly on such of their physical qualities as are most important for the uses to which we apply the oils.

As yet chemical researches have furnished us with comparatively few facts calculated to distinguish the volatile oils particularly those closely resembling each other. What chemical tests have we, for instance, to discover the admixture of oil of staranise to oil of anise, of oil of cassia to oil of cinnamon, of oil of Anthemis nobilis to that of Matricaria chamomila, of oil of geranium to otto of rose, &c?

Besides this, what means have we to distinguish the oil obtained from the plant, from the oil produced by some chemical process? We have, until now, but few instances of the artificial production of volatile oils which physically and chemically correspond with the natural products. Berthelot and De Luca make the volatile oil of mustard from glycerine, (Am. Jour. Ph. 1855, 521,) and the natural and artificial products are in every way alike; they cannot be distinguished either by their appearance or their chemical behaviour.

A. Strecker,—though a *practical* way to produce it in large quantities has not yet been found,—has demonstrated the possibility of the formation of hydruret of cinnamyle, the aldehyd of cinnamic acid, from styrone, which to cinnamic acid bears the relation of being its alcohol (Am. Jour. Ph. 1855, 20.) It is true, the natural oils of cassia and cinnamon contain, besides this hydruret, some cinnamic acid, resinous matter and a carbohydrogen, which latter has not been studied yet, and is present in very small proportion; but resin and acid are easily formed in the artificial oil, simply by oxydation under the influence of the atmosphere, and the identity is then made nearly complete. It is similar with oil of gaultheria, with which the salicylate of methylene, according to Cahours, is nearly identical, the oil besides this containing a carbohydrogen of the composition of the camphenes. Such an artificial oil we may without hesitation

and though their behaviour to various reagents may be entirely or nearly alike, certainly cannot be the same chemical compounds, even their odor indicates a marked difference; but are the camphenes obtainable from Anthemis nobilis, Citrus limonum, and Cuminum cyminum the same? The chemical investigations have not proceeded so far yet, and though such an occurrence may be supposed a probability, if we bear in mind the apparent chemical identity of other carbohydrogens, still, from the mere smell and their elementary composition, an identity cannot be adduced. Even the oil of turpentine after freed from the products of oxydation which it usually contains, is not in every respect the same, though every analysis leads to the formula $C_{20} H_{16}$. By different oils the plane of polarized light is not only deviated to the left with a different intensity, but some turn it to the right, and this behaviour is even due to their combinations with hydrochloric acid. Berthelot (Annales Chym. et Phys., xl.,) has proved these facts by a most persevering examination with French oil of turpentine, obtained from Pinus maritima, and the English oil from Pinus australis. The influence of heat has nothing to do with this phenomenon; obtained from the same tree, and after the most careful fractional distillation often repeated, an oil could in no case be obtained with an unvariable optical behaviour, nor furnishing precisely the same products under the influence of hydrochloric acid. We shall, hereafter, note another difference in the behaviour towards nitroprusside of copper.

In such an oil we are forced to assume the existence of at least two different oils, agreeing however in the relative proportion of their elementary components. A similar result has repeatedly been observed with oils which are known as mixtures, the eleoptene being sometimes present in larger or smaller quantity, and the stearoptene producible from them varying in proportion therewith. For instance, the oil of parsley (Apium petroselinum) consists, according to Blanchet and Sell of a lighter and heavier oil, separable by shaking with water, when the heavier part will soon crystallize in hexagonal needles; Gerhardt, after treating the oil in this way for a whole year, was unable to obtain them, the separation would not take place, doubtless owing to the small proportion of the stearoptene.

tion of the camphenes, is very often similar in odor to that of another oil, but is generally modified by that of the oxygenated stearoptene, which sometimes imparts a resemblance to oils of otherwise very different odors. Thus the oils of anise, staranise, fennel, and also of Artemisia dracunculus, contain a substance of the composition $C_{20}H_{12}O_2$ crystallizable and identical in the two former, but liquid and differing in some respects in the latter two; in all instances it has a faint scent of anise. The oils of cassia and cinnamon are mixtures of the same bodies probably in somewhat different proportions; the oils of pimenta and cloves contain caryophyllic acid; and thymol is a constituent of the oils of Thymus vulgaris and Monarda punctata. The oil of cajeput has the elementary composition of the camphor contained in the crude oil of Dryobalanops camphora, the carbohydrogen of which is chemically identical with that of the oil of valerian, and of bayberries (Laurus nobilis), and isomeric in its ultimate composition with oil of turpentine. A number of oxygenated oils have the composition of the camphenes with the addition of one or two equivalents or variable proportions of water like oil of bergamot, cajeput, coriander, ginger; or like the camphor from Laurus camphora, they are simply oxides of $C_{20}H_{16}$ viz., oil of wormwood; or they appear to be mixtures of this last composition with an oil of the composition of camphene, like the oils of Chenopodium anthelminticum, Lavandula vera, Lav. spica, Mentha viridis, Origanum vulgare, Rosmarinus communis. Berthelot and Gerhardt have proved the oil of lemon to always contain oxygen, but its carbohydrogen to be obtainable pure by a distillation in vacuo, at a temperature not exceeding 55° C. (131° F.), while at 80° C. (176° F.) an oil is distilled containing about three per cent. of oxygen, leaving a mass of volatilizable crystals, in which the oxygen amounts to 34,5 per cent. The behaviour of oil of lemon is so closely analogous to that of oil of turpentine, that the question might naturally be asked, whether it is to be classed with the oxygenated or nonoxygenated oils.

If we reflect on these circumstances, it must become evident that the examination of the volatile oils with regard to their purity must be attended with considerable difficulty. The carbohydrogens, though the formula of many of them is $C_{20}H_{16}$,

The volatile oils containing oxygen are generally constituted of two, sometimes of more distinct bodies, one of which is, in most cases, a carbohydrogen belonging to the camphenes, and is called *eleopten*; that part which volatilizes at a higher temperature is very often solid at ordinary temperature, and is then called *stearopten*; this often has the nature of an acid, and is usually one of the liquid parts of the oil plus oxygen, or oxygen and hydrogen. The following table will convey some idea of the composition of a number of the oxygenated oils:

NAME.	COMPOSITION.	
Oleum Absynthii, from Artemisia Absynthium	$C_{20}H_{16}O_2$.	Distilled with lime, it is resolved into water and Cymol or Cymin = $C_{20}H_{14}$.
Oleum Anisi, from Pimpinella Anisum.	$C_{20}H_{16}$ and $C_{20}H_{12}O_2$.	$C_{20}H_{12}O_2$ causes the oil to congeal at 50° F. The oil of Illicium anisatum has the same composition.
Oleum Anthemidis, from Anthemis nobilis.	Hydruret of angelyle=$C_{10}H_7O_2$,H some angelicic acid $C_{10}H_8O_4$ and $C_{20}H_{16}$.	The carbohydrogen has a lemon odor.
Oleum Bergami, from Citrus bergamia.	$C_{20}H_{16} + 2HO$.	Consists at least of two oils. Separates in cold like oil of lemon $C_{15}H_{16}O_2$. Turns polarized light to right. Its compound with HCl has the formula $3\,C_{20}H_{16} + HCl + HO$.
Oleum Cajeputi, from Melaleuca Cajeputi.	$C_{20}H_{16}O_2 = C_{20}H_{16} + 2HO$.	The composition of Borneo camphor, from Dryobalanops Camphora.
Oleum Carvi, from Carum Carvi.	$C_{20}H_{16}$ and an oxygenated oil.	The carbohydrogen furnishes $C_{20}H_{16} + 2\,HCl$ which is easily soluble in water.
Oleum Caryophylli, from Caryophyllus aromaticus.	$C_{20}H_{16}$ and caryophyllic acid = $C_{24}H_{12}O_5$.	The boiling point of the carbohydrogen is 142° C (288°). Furnishes no crystalline compound with hydrochloric acid gas.
Oleum Cassiæ, from Cassia Canella.	Carbohydrogen, Hydruret of Cinnamyle=$C_{18}H_{16}O_2$, H; Cinnamic acid=$C_{18}H_8O_4$, and some resin.	Oleum Cinnamomi, from Cinnamomum Zeylanicum, has the same composition.
Oleum Chenopodii, from Chenopodium anthelmint.	$C_{20}H_{16}$ and $C_{20}H_{16}O_2$.	Solid compound is produced by action of hydrochloric acid on the carbohydrogen.
Oleum Coriandri, from Coriandrum sativum.	$C_{20}H_{16} + 2HO$; the proportion of HO appears variable.	No solid combination with hydrochloric acid. The carbohydrogen $C_{20}H_{16}$ liberated by anhydrous phosphoric acid, has a very disagreeable odor.
Oleum Cumini, from Cuminum Cyminum.	Cymol $C_{20}H_{14}$ and Cuminol $C_{20}H_{12}O_2$.	The carbohydrogen has the odor of lemon.
Oleum Fœniculi, from Fœniculum vulgare.	$C_{20}H_{16}$ and $C_{20}H_{12}O_2$.	The oxygenated part though liquid, is chemically closely allied to the crystalline body with the same composition of oil of anise.
Oleum Gaultheriæ, from Gaultheria procumbens.	$C_{20}H_{16}$ and $C_{14}H_6O_6$.	The oxygenated part is salicylate of methylene = $C_{14}H_5$ (OMe) O_6.
Oleum Monardæ, from Monarda punctata.	$C_{20}H_{12}O$ and Thymol = $C_{20}H_{14}O_2$.	
Oleum Pimentæ.	Contains caryophyllic acid.	
Oleum Rutæ, from Ruta graveolens.	$C_{20}H_{16}O_2$ (Will.) or $C_{18}H_{10}O_2$ (Gahours).	Is aldehyd of caprinic acid. (Gerhardt.)
Oleum Salviæ, (Sage.)	$C_{20}H_{16}O$ and $C_{18}H_{15}O_2$, (Lœwig.	
Oleum Sassafras.	Carbohydro. and $C_{20}H_{16}O_4$ (Lœwig)	
Oleum Thymi, (Th. vulgaris.)	Thymen=$C_{20}H_{16}$ and Thymol=$C_{20}H_{14}O_2$.	
Oleum Valerianæ.	$C_{20}H_{16}$ and Valerol $C_{20}H_{10}O_2$.	$C_{20}H_{16}$ identical with Borneene.
Oleum Zingiberis.	$C_{20}H_{16}$+ variable proport's of HO.	The liquid from the treatment with HCl, has the composition $4C_{20}H_{16}+3HO$.

From the foregoing we observe that many of the oxygenated volatile oils contain as one of their essential constituents a carbohydrogen, which in most cases has the elementary composi-

light may be a means of distinguishing certain camphenes, though most of them deviate the plane towards the left.

The following table will exhibit the properties which may serve to recognize some camphenes that have been made more closely the subjects of chemical research:

NAMES	DEVIATES *polarized light*	PRODUCTS OF THE ACTION OF *Hydrochloric Acid gas.*	*Alcohol and Nitric Acid.*	REMARKS.
Oleum Terebinthinæ, from various species of Pinus.	left.	Mono and bihydrochlorates. Solid and liquid.	Terpin.	Some turn the polarized light to the right.
Oleum Camphoræ, from Dryobalanops Camphora.	left.	Solid.	?	Is called Borneene.
Oleum Copaivæ, from Copaifera balsam.	left.	The bihydrochlorate is solid.	After long standing deposits some crystals.	Soluble in between 25 and 30 parts of alcohol of 80 per ct.
Oleum Cubebæ, from Piper Cubeba.	left.	The solid $C_{20}H_{32}$, $2HCl$, turns polarized light to left.	Deposits the hydrate.	If rectified with water a camphor $C_{20}H_{34}O$, may be obtained by freezing.
Oleum Elemi, from Bostonia Elemi.	left.	Liquid and solid. Both are neutral to polarized light.	Terpin.	
Oleum Juniperi, from Juniperus comm.	left, less than Ol. Tereb.	No solid compound. The saturated oil appears to be $3C_{20}H_{16}+2HCl$.	Terpin after a considerable time.	Old oil not free from water separates terpin, and contains formic acid.
Oleum Limonis, from Citrus Limonum.	right.	Solid and liquid. No action on polarized light.	Terpin.	Always contains some oxygen. In low temperature solid $C_{10}H_{16}O_5$ is deposited. Under influence of water it also deposits $C_{20}H_{16}+6HO$.
Oleum Piperis nigri, from Piper nigrum.	?	No solid compound.	?	
Oleum Sabinæ, from Juniperus Sabina.	?	No solid compound.	Terpin after several months.	
Oleum templinum, from Pinus picea.	left.	After the absorption, by treatment with fuming NO_5 about 2 per cent of crystals are obtained.	Terpin after a long time.	
The empyreumatic oils: Caoutchine, from Caoutchouc.		No solid hydrochlorate.	No Terpin.	
Oleum Succini.				
Oleum Petræ rectif.				

originally are such a binary compound which, however, in many cases, has such a strong affinity for oxygen as to combine with that element already during the process of vegetable life. A further support of this supposition is the fact, that the carbohydrogen after the entire separation of the resinous and camphorous bodies has, in many instances, the odor of the crude oil, or at least an odor closely resembling it, similar to oil of valerian and oil of bitter almonds, whose odors do not depend upon the valerianic or hydrocyanic acid of the crude oils. With regard to their ultimate composition, the volatile oils may be brought into three different classes. 1st. Binary oils, consisting of carbon and hydrogen. 2d. Ternary oils, which are constituted of carbon, hydrogen and oxygen. 3d. Polynary oils, which, besides the three elements already named, contain also sulphur, nitrogen, or some other element. Such a classification must be somewhat limited, as by fractional distillation from most of the oils a carbohydrogen may be obtained; it must have reference to the crude oils as first obtained from the vegetable articles, and to the whole rectified products of the same.

All the carbohydrogens of the volatile oils may be compared with the oil of turpentine; its composition, properties, and chemical changes having been very minutely studied, so that thereby we have a good means of comparison; their compositions usually being in accordance with the formula $C_{20}\ H_{16}$ that is camphor $C_{20}\ H_{16}\ O_2$ less O_2, they have been distinguished with the generic name of "camphenes," so that camphor appears as the oxide of a camphene. A hydrate of camphene may be obtained of most of the members of this class, which from oil of turpentine and others is readily prepared by the influence of a mixture of alcohol and nitric acid; the formula of this crystallizable compound which has been termed "terpin," is $C_{20}\ H_{16}+6HO$, two equivalents of water, however, are easily lost by drying the substance in vacuo, or at a heat of about the boiling point of water. Hydrochloric acid gas enters into combination with the camphenes forming compounds which may be considered to consist of the unaltered camphene, and one or two equivalents of the acid; they are either liquid or solid, and the latter have been called artificial camphor. The behaviour towards the polarized

ON THE DETECTION OF ADULTERATIONS OF VOLATILE OILS.

By JNO. M. MAISCH.

The class of volatile oils embraces numerous bodies, the greatest number of which pre-exist in different parts of many plants, from which they may be obtained by distillation with water, with the vapor of which they are carried over into the condenser where they separate from the water, in which liquid they are but slightly soluble. Many of these oils are carbohydrogens, consisting of only two elements, carbon and hydrogen, while into the constitution of others oxygen enters as an essential and important part. Other volatile oils are the product of the action of water on two different bodies contained in the plant, and their composition is usually more complex; besides the elements mentioned before, they sometimes contain sulphur like the volatile oil of mustard, garlic, &c.; to this class also belongs the oil of bitter almonds which is a ternary compound, being according to Liebig and Wöhler the hydruret of benzoyle $= C_{14}H_5O_2+H$, or in accordance with Laurent's views the oxide of picramyle $= C_{14}H_6+O_2$. Besides these, several volatile oils are used in medicine which are the products of a destructive dry distillation; they are empyreumatic products like oil of amber, tobacco and tar, and an analogous natural product, the petroleum; most of these latter oils in their pure state are carbohydrogens, many of the ultimate composition of oil of turpentine.

Perfectly pure volatile oils are, with very few exceptions, entirely colorless; the oil of German chamomile flowers for instance cannot be deprived of its blue color, even by Overbeck's process. (Dr. C. Grischow.) They all absorb oxygen from the atmosphere and their affinity for it is increased by the action of light; by this absorption they are partly converted into a resinous body of acid reaction, and an oxidized product closely resembling, in some cases identical with camphor.

This behaviour is one of the reasons which has induced some chemists to suppose, that nearly all volatile oils pre-existing in plants, and for the greater part constituted of a carbohydrogen,

bably due to a slight trace of moisture, which is in itself objectionable; but it is perhaps worthy of a thought, whether this coarsely granular form may not be secured, and the moisture afterwards fully expelled without causing the fecula to crumble to powder.

The specimens of Col. Hallowes taken together, show, I think, clearly, a very superior *keeping quality;* there is a degree of freshness about all of them quite commendable.

The coonti mentioned by Col. H. is doubtless the fecula of Zamia integrifolia; there is also a fecula formerly prepared and used by the Florida Indians, from the Chamærops serrulata, or saw palmetto.

In conclusion, the question naturally presents itself, Why is it that we are not furnished from our own seaboard with a full supply of excellent arrow root? This question I am unable to answer satisfactorily, yet it occurs to me that its manufacture is not well suited to the genius of our people, taken as a mass; could we but transplant a colony of New England Shakers upon our soil, we would, I think, soon find Georgia arrow root, driving all other varieties out of our market.

break the cells containing the fecula, so as entirely to set it free. If I were making a small quantity, I should prefer graters of punched tin or sheet-iron, *turned by hand*, but I have not found them to answer with a rapid motion, as they soon become dull and even indented by pressing the roots against them. If they could always be presented endwise to the grater; much of the difficulty would be obviated; but this I have found almost impossible, as in feeding rapidly, some of the roots (which have a highly enamelled exterior,) will be presented sidewise, and more or less chipping and dragging small thin pieces through is the consequence."

The time already consumed by these lengthy and highly interesting communications, admonishes me to be very brief in the few words I have to add. Upon the table before me lie the twelve samples of Col. Hallowes—sample for 1857, of Mr. Cowper—three samples from the lecture-table of Prof. Thomas, of the Philadelphia College of Pharmacy, marked respectively Georgia-Bermuda and Calcutta; also a sample of commercial Bermuda from my own shelves. In comparing these specimens, the question forces itself upon me, is it true in fact that the fecula produced in our own country does not already "rival that of Bermuda in excellence and beauty?" The sample of "Georgia" fecula (probably manufactured by Col. Hallowes,) is very handsome and free from motes or mustiness; it was, if I recollect aright, pronounced by Prof. Thomas unexceptionable in every particular. The Bermuda of Prof. T. is not so handsome, and my own sample is not equal to either. The specimen for 1857 from Col. H. cannot well *excel* the "Georgia," but is in no wise inferior in any material point. His specimens for 1851–52, kept in paper, are worthy of all commendation. That of Mr. Cowper is, I think, unexceptionable, save in one point—in consequence of the incomplete arrangements in use by him his sample is not quite so free of motes as those of Col. Hallowes.

A trifling fault (if fault it may be considered,) which I find with all these samples, with one or two exceptions, is the state of aggregation. In the "Georgia" specimen the fecula is in small irregular masses, and quite free from powder, which in my judgment adds to the beauty of the sample. This condition is pro-

to a single prominent drug house in Philadelphia, after supplying my old customers in Savannah, Charleston, &c.

Statement of Crops of Col. Hallowes.

Years.	Ground Planted. Acres.	Tasks.	Rows.	Roots Dug. Number of Baskets.**	Product in Fecula.
1846*					5,300 lbs.
1847*					8,900 "
1848*					12,500 "
1849†	33	3	12	2144	20,000 "
1850	34	3	16	1058½	8,800 "
1851	40	3	20	1169	8,600 "
1852	34	3	16	1213	14,160 "
1853	46	1	30	724¾	8,000 "
1854‡	48	1	7	1114	6,400 "
1855	51	1	18	705¾	6,986 "
1856§	56	3	20	300¼	2,500 "
1857‖	16	3	8	472¼	5,324 "
1858¶	35				

* Portion of memoranda mislaid.

† A considerable portion of this year's crop planted on land recently purchased, which had been "cow-penned" by former owner.

‡ If I remember right, tubers injured by frost, large quantities being decayed in the banks.

§ Seed decayed in the ground.

‖ Short of seed; part of ground manured.

¶ Crop yet in the ground.

** Tubers when dug were measured in baskets differing a little in size, but would average 1¾ to 2 bushels each.

"The difference observable in the fecula in proportion to the quantity of roots manufactured, is to be attributed in a great measure, to the imperfect reduction of the roots to a fine pulp, owing to the different kinds of graters used. Thus, in 1856, from 300 ¼ baskets of roots I only made 2500 pounds, and in 1857, from 472 ¼ baskets, I more than doubled that quantity. In 1856, I used graters of circular saws, which chipped the roots and did not sufficiently break the cells. In 1857 I used circular graters of straight saws, which I think much more efficient. Reducing the tubers to a perfect pulp is, in my opinion, the most important part of the whole process. I am not yet perfectly satisfied with *any* of the methods which I have used. Unlike the potato, wheat, &c., from which starch is made, the arrow root is very fibrous, which renders it difficult to

The pulp is passed at one operation through three sets of sieves, of different degrees of fineness, put in motion by machinery, and using an abundance of water. As it is strained, the fluid runs into vats, when it is allowed to settle, water drawn off and fresh water added, stirring up the sediment thoroughly. This process is repeated a second time, and it is then strained through sieves of the finest bolting cloth, again washed with successive portions of water, allowed to settle in tubs, water decanted, and the tubs removed to the drying house, where the fecula, when settled into a solid mass, is broken up and placed on frames of convenient size covered with cotton shirting, which are carried into the drying room, heated artificially, and allowed to remain 18 to 24 hours, taken out, allowed to cool and put in bins ready for packing. I use boxes containing about 100 pounds each. In the course of the process of manufacture which I have attempted to describe, 5000 gallons of water are used daily, all of which is furnished by a well of the purest water, not exceeding twelve feet in depth."

I do not think my arrow root has the pearly appearance so peculiar to that of Bermuda, which the latter may perhaps receive from being made with tank water, (I am informed that tank water is used in preparing it,) or it may proceed from the more perfect maturity of the plant, which, according to Ure, requires eleven months in the Island of St. Vincent. One thing is certain, that my arrow root is much drier than the Bermuda and keeps much longer. I send you small samples of fecula of the crops of several successive years, which have been kept without any particular care; some in tin cases, others simply in paper in a drawer. Some years ago I sent several boxes containing one hundred or more pounds each to New Orleans. The gentleman to whom it was sent having received an appointment abroad before it was sold, consigned it to a druggist in the city, by whom it was placed in a damp store-house, where it remained, I think, nearly or quite a year; and being still unsold, I ordered it to my agent in New York, who sold it before arrival, on condition that it was sweet. It arrived in perfect order. You will think, perhaps, that I wish to puff my arrow root. I have no reason for so doing, as my entire crop is now annually engaged

long tuber penetrates much deeper into the ground, and might in a very dry season produce better upon that account. The fecula from both is identical."

7th. What is the product to the acre?

"I again refer you to the statement of my crops. I think I may safely say that five pounds of fecula to the bushel of roots is a fair estimate when it is made on a large scale; when worked with great care it will undoubtedly yield a larger quantity. There is a considerable waste in making it upon a large scale, which I have found unavoidable, although I have taken great pains to prevent it. Much depends upon reducing thoroughly the roots to a perfect pulp, breaking every cell, for which purpose I have used many kinds of graters, from those of punched tin or sheet iron, to graters of straight saws and circular saws. I should give the preference to the punched graters, as the most efficient, if they did not so soon become dull. I have tried a double set of iron rollers, which, however, have proved a failure. In the Island of St. Vincents they use two sets of brass rollers, and successfully, according to Dr. Ure. I think I could by some alterations make the rollers answer, but it would be a costly experiment.

"Digging the roots is a slow and tedious process. I have tried the plough without success. If the hoe is used, many of the roots are cut. For several years I have used an implement with two long stout prongs, set into a handle like a hoe, which by striking well into the ground and forcing the handle from you, loosens the plants in the bed, which are then pulled out by hand; most of the tubers adhere to them if they (the plants) have not been killed by frost. The hole, from which the plant is taken, should be examined for any roots which may have been left behind. The tubers diverge in all directions from the plants, hence the difficulty in digging, and danger of cutting them with the hoe. The pronged hoe will sometimes penetrate them."

"There is no secret in making arrow root. The great requisite, after the roots have been well washed and reduced to a fine pulp, is an abundance of water, together with great cleanliness; and until the hands are well trained, the constant vigilance of the master. The latter is more or less necessary at all times.

rows were lying upon the ground in regular order, having been pulled up by the geese. They seemed to have worked very methodically, each goose taking its own row and not leaving a single plant in the ground. They did not eat the plants, and mischief I believe was their sole object. The geese were sent off, and I have kept none since. The common fowl and chickens injure the plant, while young, by picking the leaves, and even sometimes destroy it. Two or three times I have observed, during the fall season, a considerable number of caterpillars among the plants, which eat the leaves and finally wind themselves up in them, by drawing the leaves around them, with a few filaments from the cocoon. The moth in due time comes forth, but I have not observed a second crop of caterpillars. I do not think they have done me serious injury, but successive hatching undoubtedly would. The grub grows to a large size, nearly if not quite two inches long, is green with a reddish brown head, quite large in the middle of the body, tapering in an unusual manner towards each extremity. I have not seen it elsewhere."

5th. Does it bear light frosts?

"I do not think that the plant is materially injured by our spring frosts, when not severe, but simply checked in its growth. Our autumnal frosts, when not too severe, I think are rather beneficial than otherwise, checking the growth of the plants, and causing the tubers to increase rapidly in size. It is advisable to dig the roots before a heavy black frost occurs, as in that event the roots near the surface are apt to be touched, becoming useless, and if banked with the sound roots will cause them to decay. I have them banked in the same way as sweet potatoes, covering them thickly with earth to prevent their sprouting. I think it would be preferable to put them in houses constructed similarly to what is here called a potato cellar."

6th. Is your plant the Maranta arundinacea?

"It is. I have two kinds, the only difference being that one grows much taller than the other, bearing tubers of greater length, the joints of which are much longer. I give the preference to the smaller plant with short-jointed tubers, as it is more easily dug, and less likely to break in digging. The

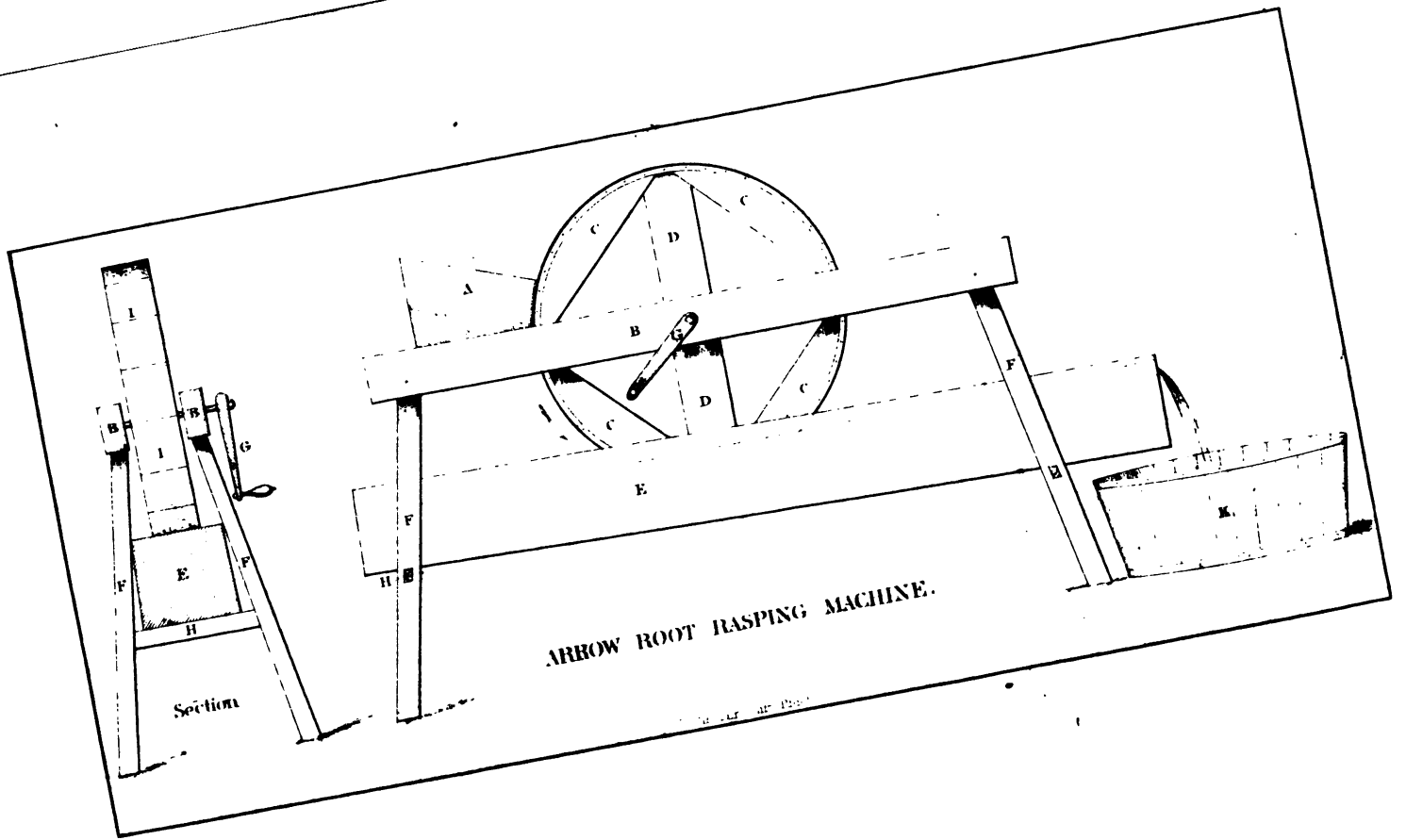
machinery, of which he took notes, and I understand commenced the business, having purchased a small steam engine for the purpose. Of the result I am not well informed, but have heard that he soon discontinued it. On the Miami river, South Florida, a large business was carried on by a gentleman named Ferguson in the manufacture of Coonti or Coontee, (the Indian name I believe,) the botanical name of which I know not. This plant is indigenous to that part of Florida, growing in the greatest profusion, and requiring no cultivation. It is dug and manufactured, I presume, in the same manner with the genuine arrow root. Before the late Indian difficulties in Florida, I am told that large quantities of this preparation were sent to the North, under the name of Florida arrow root. I have seen the fecula, which appears to be good, but have not made any special examination of it. Unquestionably the plant is not the Maranta arundinacea, the two plants being entirely distinct, of which fact I had an opportunity of judging, through the kindness of Dr. Payne, who sent me some roots of the coonti, which grew for some years in my garden. In the 2d. vol. page 159 of the new Amer. Encyclopædia, the coonti is described as a species of sago palm.

3d. "Do you regard the Maranta as a certain and reliable crop?"

"This question will be best answered by referring again to the statement I send in reply to the first question. I will, however, add, that like all other plants, its product depends much on the season. If the plant is checked by a long drought, or a very cold and wet spring, soon after it comes up, it is long in recovering, and perhaps never entirely recovers. If the young plants get a good and early start, they stand both drought and wet well. Much also depends, I think, on the way in which it is cultivated. Like cotton it is bedded, and like cotton after the bed is formed it should be as little disturbed as possible, merely removing earth sufficient to destroy grass or weeds, and adding a little fresh earth."

4th. To what accidents and uncertainties is it subject?

"Geese are its inveterate enemies. When I commenced its culture, on going into the field, soon after the young plants had come up, I observed to my horror that the plants on several


ARROW ROOT RASPING MACHINE.
Section
A
B
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"I send you a specimen of the arrow root of my last year's manufacture. That made in this neighborhood is considered in every respect fully equal to the article made in Bermuda. With the same skill and care in the manufacture, I have no doubt that as good an article can be made on the coast of Georgia and Florida as in any part of the world. The quantity is probably greater under the tropics.

"I use tinned iron for the rasping part of the mill, and wooden vessels for washing and precipitation. Perfect cleanliness is required in every operation.

"I send you a sketch drawn by one of my sons, of the rasping machine. I. I. wheel-rasp, covered with strong tinned iron coarsely punched, the rough projections turned outwards, and the sheets nailed on, overlapping in a direction opposite to that of the movement of the wheel. B. B. frame of wood. E. trough partly filled with water, and sloping towards tub, K.; as the trough receives the pulp, the excess of water runs over a notch in the end of the trough, as shown. A plug is placed at the bottom for emptying it. A, hopper in which the cleansed roots are placed, and pushed forwards by a board held in the hand."

In reply to questions propounded, I have the following from Col. Miller Hallowes, near St. Mary's, Georgia.

1st. What is your usual crop?

"In reply to this, I send you a statement of my crop of arrow root, with products in roots or tubers, and the prepared article for several successive years, which you will find annexed."*

2d. Can you give me any estimate of the crops of other growers in your vicinity, or elsewhere, at the South?

"I cannot. I believe it is cultivated on many plantations, on a small scale, merely for the use of the plantations. In Florida, immediately opposite St. Mary's, there were two persons who formerly cultivated it for sale, but their crops, I believe, did not exceed a few hundred pounds. Of the quality of the article made by them, I know nothing, but believe it was good. I do not know whether they now continue to make it. Some years since Dr. Payne, of Micampy, Florida, visited me for the purpose of getting information upon the manufacture of arrow root. I gave him all the information I possessed, showed him my

* See page 341.

boxes or barrels. Air drying in the shade is preferable to sun drying, and dust must be sedulously avoided. Whatever the scale of manufacture and the machinery used, the essential points are,—1st. Maturity of the roots. 2d. Cleansing the roots before rasping. 3d. Rasping so as completely to separate the fecula from the fibre. 4th. Separating the fecula from sand and all other impurities, by frequent agitation and subsidence. 5th. Thorough and careful drying, to avoid mustiness or mildew. 6th. Packing so as effectually to exclude the air.

"The principle of separating fecula being the same, any labor saving machinery adapted to the manufacture of potato starch, may be applied to arrow root. On a large scale there would be great economy in driving several rasping machines by an engine, agitating the feculent mass from the rasper in large vats, filtering through cloths, drying by hot air in large buildings furnished with cloth stretchers, &c.

"I give you the results of two experiments carefully made by me, to show how much fecula may be produced in *this climate;* a longer season and greater maturity should give more.

1*st Experiment.*—Thirty-one heaped bushels of roots, averaging forty-three pounds the bushel, being manufactured in the way above described, yielded 178 pounds of dry arrow root starch, being five and three-quarter pounds to the bushel, or thirteen and one-third per cent of the weight of the roots. 100 pounds of sweet potatoes manufactured in the same way, yielded twelve pounds of dry starch.

"2*d Experiment.*—Laboratory scale, carefully made, an untrimmed arrow root, washed and dried, 995 grs.
Skins and ends, 93 "
Weight of cleaned root, 902 "
Being grated, washed, and prepared in the usual way, it gave

of clean dry starch,	182 grs.	or	13.26	per cent.	
Clean and dry fibre,	42 "	"	4.23	"	"
Skins and ends,	93 "	"	9.35	"	"
Water and loss,	728 "	"	73.16	"	"
	995		100.00.		

"This, to a bushel of roots weighing 43 pounds, is 5.70 clean, dry fecula. The yield of roots is from 100 to 150 bushels, of all sizes, to the acre.

layer of corn stalks, and placing over the whole a coating of two to three inches of earth. The object is to keep up an uniform temperature, and to avoid dampness and the extremes of heat and cold. The plants are allowed to grow until the leaves and stems are slightly affected by the frost; the roots are then to be dug as potatoes are; the larger selected for manufacture, and the smaller for seed. Those intended for manufacture are to be stacked in heaps of twenty to twenty-five bushels, in the same way directed for the seed-roots. They must be carefully protected from cold, as the fecula is changed by freezing.

"The following is the mode of manufacturing for family use. The roots are washed, the scales on the outside removed by hand with a knife, and then again washed, and placed in a tub of pure water. The next operation is to rasp down the roots by pressing them, endwise, against the circumference of the rasping machine. This machine (see drawing) consists of two wooden disks, framed as large pulleys are, about three and a half feet in diameter, placed six inches apart, and covered with strong tinned iron, punched from within like a coarse nutmeg grater. It revolves around a central axis of wood, with as great a velocity as can be given without throwing off the water from its circumference. A large trough is placed under the wheel, which is kept nearly full of water; the wheel dips into the trough about six inches. As the wheel revolves the grated pulp is washed off into the trough; and when it becomes too thick, the mass is passed into a large tub, and the trough refilled with fresh water. The pulp collected in the tub is then pressed by hand until the fecula is separated from the fibre, and after removing the latter the fecula is allowed to settle to the bottom. The next and most important operation, is to pour off the water from the sediment, and when the latter has become pretty firm, to break it carefully into cakes, and with a knife blade to remove from the bottom all sand and other impurities. The cleansed portion is then to be resuspended in a tub of pure water, allowed again to settle, again dried and cleansed. This operation must be repeated until the fecula settles in a *perfectly white and clean cake*. On the careful performance of this part of the manufacture depends the excellence of the article. The cakes are next to be broken up and placed upon cotton cloth stretchers until thoroughly dry and pulverulent, when the powder should be firmly packed in

tus used in its manufacture: all of which are herewith respectfully submitted.

For the reason above stated, it has been out of my power to offer any reliable estimate of the extent of the production in this country; quite a large proportion of the aggregate is consumed upon the estates, and does not enter the market. Costing no actual money expended, the consumption of it as a dietetic article is unrestrained, and it supplies the place, in great measure, of corn starch, farina, Irish moss, gelatine, and even rice and flour, in the preparation of delicacies for the table, as well as the invalid's chamber. My friend Dr. J. C. Le Hardy, of Savannah, Georgia, writes: "Our druggists buy it (Georgia arrow root) every year, in quantity, and prefer it to other kinds. They purchase mainly from one individual near St. Mary's. The estimated quantity bought last year in this city is 2,900 pounds, as reported by the different drug houses engaged in the trade. Besides the principal grower alluded to, they trade with small planters, in quantities varying from a few pounds to one hundred-weight."

Mr. James Hamilton Cowper writes, "It affords me pleasure to give you any information in my power on the subject of the growth and manufacture of the Maranta arundinacea, or Bermuda arrow root; but I regret that my knowledge of the subject, although running through forty years, has been on so limited a scale, as to prove, merely, that an excellent article, in every respect equal to the best Bermuda, may be made on the seaboard of Georgia, with a very simple apparatus, and to an extent adequate to all the culinary and medicinal wants of a family. As respects its profit as a crop, I am unable to give an opinion; and on this point must refer you to Col. Hollowes, as our best and only authority. He has gone largely into the field culture, and has erected extensive buildings and machinery.

"The cultivation of the arrow root is precisely that of the sweet potato. A rich, fresh, sandy soil, a large, full bed, the seed (roots) placed six inches deep, and a foot apart, careful hoeing and keeping the bed up, constitute the culture. The seed-roots should be planted as soon as the spring is confirmed—with us, about the middle of March. The smaller tubers or roots are to be selected for seed, and are best preserved by placing ten to fifteen bushels in a conical heap, stacking closely around them a

annual meeting to be able to present a complete chemical analysis of the oils to the Association.

EXPLANATION OF PLATE.

Fig. 1st. Whole leaf.
Fig. 2d. A whole fruit.
Fig. 3d. The same from which the superior half has been separated, to show the disposition of the seeds.
Fig. 4th. A whole seed.
Fig. 5th. The same cut transversely, to show the kernel corresponding to the angles.
Fig. 6th. A kernel deprived of its membranous covering.
Fig. 7th. Columella—the point of insertion for the seeds.
Fig. 8th. A kernel.

ON MARANTA ARUNDINACEA.

By Robert M. Battey, of Rome, Georgia.

To the query No. 20,—"To what extent is the fecula of Maranta arundinacea produced in Georgia, Florida, and other Southern States, and what impediments prevent its being made to rival that of Bermuda in excellence and beauty?" I desire to submit the following reply:—

I regret that the information I have been enabled to obtain upon this subject is not of a more general and satisfactory character. The facts in my hands are so limited, that I can present but a partial and imperfect report. The production of arrow root is for the most part confined to those who grow it for their own family use, and offer for sale only small lots which may chance to exceed their wants, in favorable seasons, when the yield is large. Col. M. Hallowes, of St. Mary's, is the only individual within my knowledge who makes it a regular staple crop, and it is to him and to James Hamilton Cowper, Esq., of St. Simon's Island, that I am chiefly indebted for such information as I shall be able to communicate, as also for many handsome samples of the fecula, and a drawing of the rasping appara-

nut; it retains its odor until heated to 518° F., at which point it begins to decompose and come over into the receiver in thick fumes. At 24° F. it congeals imperfectly; when congealed it is homogeneous, and resembles lard; it is not a drying oil; its specific gravity at 60° is 0.917; soluble in ether in the proportion of 1 to 1.75; soluble in 120 parts of boiling alcohol, which on cooling deposits it; it burns with a clear, white light, without incrusting the wick or depositing much carbon; I consider it equal to the best sperm oil for burning. One hundred pounds of nuts yields three gallons of pure oil by the usual mode of expressing by machinery. One hundred pounds of nuts yield on an average forty-two pounds of kernels; they alone contain the oil but in making the oil it is necessary to grind the shell and kernel together, as was found by experiment, in consequence of the machinery not acting on the smooth, oily cake. Brazil nut oil forms with the protoxide of lead a perfect union, by the usual mode of preparing lead plaster. The plaster is of the proper consistence, of a rich cream color, and the glycerine resulting from the combination of the acids of this oil is, in my opinion, superior to that obtained from commercial olive oil when treated similarly; one gallon of oil requires six pounds of litharge to decompose it, and yields twelve ounces avoirdupois, of glycerine; this valuable property is of itself sufficient to recommend it in pharmacy, and does away with the opinion of many chemists, that no other vegetable oil can be substituted for olive oil in the manufacture of lead plaster and glycerine.

The ointment of the nitrate of mercury made with this oil is of a dark orange color, and is not so perfect as that made from neat-foot oil; but it will answer as asubstitute, where no other can be obtained; it is best made without the aid of heat. All the other preparations made with the oil were perfectly successful, such as white hard soap, pomatums, liniments, &c., proving its perfect capability of taking the place of olive oil in Pharmacy and the arts. The ultimate analysis of this oil is not so perfect as it was my intention to present to you, but I can safely assert, that besides the usual acids contained in vegetable oils, there is a distinct one in this, and I hope at our next.

settlement of Marzagan, (which place was given up to that sovereign,) were transferred to Macapa, situated on the north side of the Amazon, where the forests abounded in Bertholletia, and from the nuts of which they made large quantities of oil, which has since become a great staple of consumption in that part of Brazil. The value of nuts annually exported from Para to different parts of the world, is from eighteen to twenty thousand dollars; they cost in Brazil about one dollar per hundredweight and are sold in the United States for from five to eight dollars per hundred pounds. I have been unable to discover that the exported nuts are used for any thing else but eating and making cream syrups for mineral water. No oil is made from them out of their own country; and there is only one instance upon record where they were used for that purpose with a view to discover its quality and useful properties. "A French privateer captured in 1807 an English vessel loaded with Brazil nuts; she took the prize into the port of Rouen, where a merchant bought the cargo, and had oil made from it; the oil was used for burning, and was preferred to that made from European fruits; and so pleased was the merchant that he wrote to Paris to know the botanical name of the nut, and the country where they are found, with the intention of procuring a large quantity."

The oil, as made in Brazil, is disagreeable to the taste, and of a dark color, in consequence of their roasting the nuts for a considerable time in rude ovens. The manner in which the natives extract the oil is very imperfect, and is as follows;—after the nuts are well roasted, they are pounded to a coarse powder in a large wooden mortar, then transferred to bags made of the fibres of a species of palm, then subjected to pressure of different kinds, according to the ingenuity of the manufacturer. In Brazil its principal uses are for burning, making ointments, and extensively adulterating copaiba; it, as well as the oil from the Andrioba and Sapucàia nuts, might be exported in large quantities, as those fruits are found in the greatest abundance throughout the whole of the provinces of Para and Amazonas. The expressed oil of Brazil nuts which I made from the recently imported nuts, is clear, and of a beautiful, bright amber color; it has the peculiar smell and taste of the

the savages on the border of the Rio Negro, *juvias*. The nuts are gathered in May and June, and the Indians and Brazilians, who take advantage of every event to have a festival, make this an important affair, and the harvest of the *castanhas* is celebrated by dancing, singing, &c. The fruit, when fresh, is exceedingly agreeable to the taste, and is considered wholesome by travellers. M. Bonpland, speaking of himself and Baron Humboldt, says, "We were very fortunate to find some of these almonds in our voyage on the Oronoco; for three months we had been living only on bad chocolate, rice boiled in water, always without butter, and often without salt, when we procured a great quantity of the fresh fruits of the Bertholletia; it was in June, the Indians had just gathered the crop." Another traveller, Prince Adelbert of Prussia, he who the other day was a guest of the Emperor Napoleon at the Cherbourg festival, was glad to have a few Brazil nuts to eat, in his ascent of the river Xingu, to visit an outpost of Christianity, and assist at the festival of baptising the heathen Jurunas. He says, "Paint to yourself, reader, the rapture with which we devoured some castanhas de Maranhao, and a handful of farinha, which the padre carried with him, wrapped up in a handkerchief." Our own countryman, Lieutenant Gibbon, also feasted on the fresh nuts, in his descent of the Marmoré, as we learn by the following:—"The Indians gathered a quantity of cream, or Brazil nuts, from under a large tree on the Bolivian side; the nuts are encased in a hard shell, which the men broke with our hatchet; the tree was one of the largest in the forest, and the only one of the kind we saw. Pedro pointed it out to them, otherwise we probably should have passed it without knowing such good things were near us; the nuts, with a turkey and a goose, shot on the beach, served us for breakfast." This was on the 18th of September, so that the nuts keep fresh and good in their woody covering, from June up to that time. No attempts have been made to cultivate the Bertholletia, although no doubt the Portuguese government wished to encourage the gathering and exportation of the nuts, and I think they had that object in view when, in 1768, after the treaty of peace and alliance concluded with the Emperor of Morocco, the Portuguese families from the

History.

The Juvia tree that yields the Brazil nuts is one of the most majestic in the ancient forests of Brazil; it towers up with a straight trunk, high above its forest companions, and is over nine feet in circumference at its base. It was unknown in Europe before the visit of Humboldt and Bonpland to South America; they first met with it in the neighborhood of Esmeralda, on the Upper Oronoco, in lat. 8° N., and was named by them, *Bertholletia*, in honor of L. C. Berthollet, who was then becoming distinguished in chemistry and vegetable physiology.

Lieutenant Gibbon, in his descent of the river Mamoré, or Madeira, found Brazil nuts in the market of Trinidad, Bolivia, lat. 15° S. The above places seem to be the boundary of its growth; but as we approach the Equator, along the tributaries of the Amazon, the trees increase in number, and at Santa Isabella, on the Rio Negro, under the Equator, the largest quantities of the fruit are gathered; (I may mention here, that the best sarsaparilla in the valley of the Amazon comes from the same place.) The tree is called by the Indians, *juvia*, by the Portuguese, *castanheiro*, by the Spaniards of Venezuela, *almendrom*, by the inhabitants of Cayenne, or French Guiana, *totocke*, by which latter name it was known to Laet, who mentions it in his "Novus Orbus." The triangular seeds of the Bertholletia were known in Europe as early as the sixteenth century, and were first described by Clusius, who called them *almendras del Peru*, (Peruvian almonds,) as they no doubt were first sent from that country to Europe. To reach Peru, they must have been carried up the Amazon to its great tributary in that country, the Huallaga, and up that stream to Tingo Maria, the place of disembarkation, and from thence across the Cordilleras to the Pacific ports, a distance of 2,700 miles, if we take the town of Barra, on the Amazon, as the place from whence they were most likely sent. Brazil nuts are known in Europe and on this continent by several names; in Portugal they are called *castanhas de Maranhao*, (chestnuts of Maranhao,) in England, Brazil nuts, and in the United States of America, *cream nuts;* in the southern part of Brazil, *castanhas de Para*, and *Maranhao*, (chestnuts of Para and Maranhao,) at Cayenne, *touka*, and by

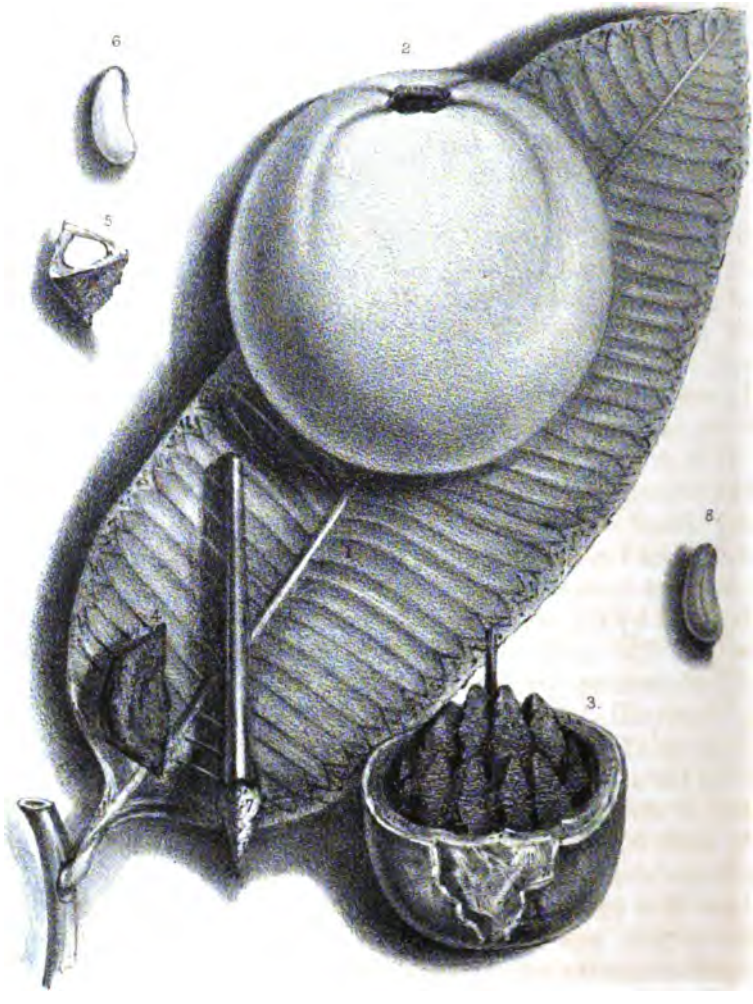
ON BRAZIL NUTS AND OIL.

By Edward Donnelly, M. D., Philadelphia.

Bertholletia excelsa. Polyandria an Monodelphia, Linn.—Juvia tree of the Indians.

A tree of from one hundred to a hundred and twenty feet high, from three to four feet in diameter, straight trunk, separate alternate branches, bare toward their base and loaded at their summits with leaves. The leaves are over two feet long, of a bright green color on the upper surface, and silvery, with transverse veins on the under; semicoriaceous, elegantly depressed at their top, alternate, with short footstalks, they give the tree a beautiful appearance by being collected in tufts at the extremity of the long open branches. Calyx, corolla, and sexual organs unknown. The Indians on the banks of the Rio Negro told M. Bonpland that the flowers were of a violet color, but others say they are yellow, and are not produced until the tree is fifteen years old. The fruit is a large woody pericarp, nearly spherical, from six to eight inches in diameter, half an inch thick, externally green, smooth and shining, covered with branchy lines, internally four to five compartments, containing several seeds attached to a central axis; these dissepiments become ruptured as the fruit ripens; the fruit contains from eighteen to twenty nuts; the small hole seen at the summit is closed by the upper extremity of the columella; it is not dehiscent. The seeds are triangularly shaped and composed of three distinct substances covering the kernel, first, the exterior hard, tuberculated covering of a dark brown color, osseous or cocoa-nut like in its structure; second, the interior, which is much softer and of a cinchona red color; and third, the membranous envelope of the kernel of a light cinnamon color. The kernel is single, uniform, of the consistence of almonds, very agreeable to the taste when fresh, and yields a fixed oil in abundance.

I have been unable to find any English work that describes the Bertholletia, and the imperfect botanical history given above is translated from the valuable work of Humboldt and Bonpland on Equinoctical Plants. The work contains a drawing of the fruit, leaf and seed, which I thought worthy (as the book is scarce in this country) of having transferred and painted for the Association.



⅓ of natural size.

D C Oneill, Artist

T Sinclair's Lith

the leaves distilled, that the strength of the water would amount to one-tenth of one per cent, which is that of the best cherry laurel water.

M. Cap found that cherry laurel leaves, between the 15th of June and the 15th of August were very uniform in composition, and that the distilled water made during that season was reliable, if the process was conducted with the requisite care. M. Deschamps determined that water distilled from the unbruised leaves after twenty-eight hours' maceration, contained thirty-five per cent less hydrocyanic acid than that from the same leaves, after they were properly bruised. He is also of the opinion that about five drops of sulphuric acid added to each pint of cherry laurel water very much increases its permanance.

As the wild cherry grows in all sections of the Union, it will afford to country phyicians a source of hydrocyanic acid easily attainable, and as reliable as cherry laurel water.

The Fruit of Wild Cherry.—In the neighborhood of Philadelphia, the wild cherry ripens its fruit about the middle of August. It consists of a black drupe born in racimes. The pericarp contains, when ripe, very little hydrocyanic acid, but the kernel of the seed is in this respect very much like the peach kernel. The juice of the fruit, obtained without rupturing the stones, readily enters into fermentation, and affords a weak, vinous liquid of no medicinal value; if, however, the stones and kernels are bruised, and left to macerate with the pulp for twenty-four hours, and one-fourth of pure alcohol be added and left for a week, expressed and filtered, a dark-red brown hydrocyanic liquid is obtained, similar in character to Tilden's wine of wild cherry. The fruit of wild cherry loses sixty-seven per cent of its weight in drying; the leaves lose but fifty-six per cent.

of cinchona, (see vol. xxv. p. 402 of same journal,) and then twenty-four grains of citrate of iron dissolved in each fluid ounce; (see Amer. Jour. Pharm., vol. xxx. p. 315.) This preparation, when carefully made, combines the valuable properties of the bark with iron in a very elegant and concentrated form.

The Leaves of Wild Cherry.—The poisonous nature of the leaves of the wild cherry tree has long been known. Dr. Coxe, in his Dispensatory, (edition 1806,) says, "The distilled water of the leaves is a powerful poison to different animals, which *seems* dependent on the presence of the same principles which exist in peach kernels, &c., lately shown to be prussic acid." It is usual to import the "Aqua Lauro-cerasi" of the foreign Pharmacopœias to meet the demand of physicians for this form of hydrocyanic acid. It is believed that the distilled water of the leaves of wild cherry may be substituted for it with perfect reliability and equal uniformity. The question has been asked, whence comes the volatile oil and prussic acid of the cherry laurel leaves? Does amygdalin exist in them? Liebig was not able to detect amygdalin in the cherry laurel leaf. He believes that the oil is secreted in the leaf, like other volatile oils, ready formed, but probably derived from pre-existing amygdalin in the circulation of the plant. This view is rendered probable by experiments in the paper on amygdalin, before quoted, in which the presence of amygdalin in small quantity was detected in the alcoholic extract of dried wild cherry leaves. To ascertain the hydrocyanic acid value of the leaves, 1,000 grains, recently gathered, were cut and bruised quickly, put in a bottle, with twelve fluid ounces of water, macerated twenty-four hours, and distilled till three fluid ounces had passed over. The first ounce was quite milky, the volatile oil in suspension soon separating from it, and collecting in globules at the bottom of the receiver. The greater part of the oil and the acid were in this portion, because, when the other two ounces of water had distilled, they re-dissolved the oil, and retained it in solution. 1,000 grains of this distilled water, when treated with a weak solution of nitrate of silver, afforded 3.25 grains of cyanide of silver, indicating 0.65 grains of anhydrous hydrocyanic acid in that quantity of the distilled water. It is believed, that if the quantity of distilled water was made equal in weight to

When carefully prepared fluid extract of wild cherry bark contains .0006 per cent of hydrocyanic acid, keeps well, and a teaspoonful is a sufficient dose.

The action of emulsin of almonds on wild cherry bark is calculated to render it less astringent, and more bitter, by the removal of a portion of the tannin, without disturbing the bitter principle.

Wine of Wild Cherry Bark.—For the sedative uses to which this bark is applied, an alcoholic preparation of it cannot be employed with propriety, but when its tonic power is sought, it has been proposed to employ wine as a menstruum. The manner of making this wine as first introduced has not been made public, but in the paper last referred to, a formula was given which yields a very efficient tonic preparation, with the sedative properties of the bark well developed (Am. Jour. Pharm. 1856, page 110.) The process is the same as for fluid extract, substituting sherry wine for sugar. The wine of wild cherry, made by Tilden & Co., appears to be made from the fruit, has very little astringency or bitterness, and is either the bruised fruit fermented, perhaps with the addition of sugar to give body, or in lieu of this, a portion of wine.

Next in order comes the suggestion of Francis A. Figueroa, (Am. Jour. Pharm. 1858, 304,) to employ glycerin as an agent in the preparation of wild cherry bark syrup and fluid extract, partly as a substitute for sugar, and partly for its solvent and anti-putrescent qualities. Two ounces glycerin is added to the water necessary to moisten four ounces of the bark macerated 48 hours, displaced to get ten fluid ounces, and the glycerinic infusion converted into syrup with twelve ounces troy of sugar. The extract is made in the same way by direct maceration and displacement, using eight ounces of bark two ounces of glycerin, six ounces of sugar, and sufficient water to get a pint. It must be apparent that the latter is necessarily deficient in hydrocyanic power.

In the same journal, William R. Warner gives a formula for *Ferrated Fluid Extract* of wild cherry bark. This preparation is the simple fluid extract, suggested by the author of this paper, from which the tannin is removed by the action of hydrated sesquioxide of iron, as in Simes' formula for ferrated tincture

to coarse powder and macerated in five-sixths of the water, that is intended to remain in the syrup, during 48 hours in summer, and longer at seasons when the temperature will admit of it without danger of spoiling; and then slowly displaced into a suitable vessel to avoid exposure. The merit of a full maceration is to develop the largest possible amount of the active principles resulting from the amygdalin. By too long a maceration in warm or cold weather, a change ensues which involves the coloring matter of the syrup, gives a cloudy infusion and impairs the quality of the preparation.

Fluid Extract of Wild Cherry Bark.—In reflecting on the difficulty presented by the large proportion of sugar in the syrup, the author conceived the idea of rendering the soluble emulsin of sweet almonds available as a means of decomposing all the amygdalin in wild cherry bark, so as to get a more concentrated preparation with a smaller dose, but in other respects like the syrup, a result impossible by the direct treatment of the bark, owing to its bulk. In a formula published Jan. 1856, (Am. Jour. Phar. vol. 28) this idea was carried out, sugar of milk being substituted for cane sugar; but it was found that lactine, in the quantity present in a saturated solution, would not prevent the spontaneous decomposition of the solution of wild cherry bark, and in the following number a modified formula was given, substituting cane sugar.

In this formula 24 ounces of the ground bark is exhausted by alcohol .835, and the tincture reduced to a soft extract by distillation, so as to get rid of the alcohol. This extract is then liquified by means of half a pint of water, and the solution added to a mixture consisting of three ounces of almonds, beaten into an emulsion with a pint and a half of water *without straining*, and contained in a quart bottle, kept close; in this way the solution becomes strongly charged with hydrocyanic acid. The mixture is then subjected to pressure to remove the fluid part which is at once thrown on a suitably arranged paper filter and allowed to pass into a three pint bottle containing 36 ounces *troy* of granulated sugar. The dregs from the press are mixed with sufficient water, and again expressed, and the liquid added to the filter until three pints of fluid extract result, when the sugar has entirely dissolved.

tree, growing near Philadelphia, which adds much to the value of the experiments, and we believe satisfactorily determines that the Autumn is the proper period for the collection of wild cherry bark. Mr. Perot also sought for phloridzine without success.

Pharmaceutical Preparations.—Wild cherry bark was so moderately esteemed by the framers of the first edition of our Pharmacopœia, in 1820, that it was placed in the secondary list of the Materia Medica, and no preparation of it was introduced. The name then adopted for it, Prunus Virginiana, although yet retained for this bark to avoid the ill effects of a change of names, is not the correct one. In 1830 it was placed in the primary list, and the present formula for making the cold infusion was adopted. The true reason for the long maceration in *cold* water, which experience had suggested, was not easily understood until after the chemical history of the bark had been developed, and it applies with equal force, whether the infusion be made by displacement or maceration, viz. to give time for the reaction of its constituents to develope the volatile oil, &c.

Syrup of Wild Cherry Bark.—In April, 1842, Joseph C. Turnpenny and the author published a formula for syrup of wild cherry bark. This preparation was exceedingly well received by the medical profession, and was adopted in the Pharmacopœia of 1850. Previous to the suggestion of this syrup it had been usual to prepare the infusion, in certain cases, in a more concentrated form by resorting to the process of percolation, and it occurred to them that by saturating the infusion with sugar it could be rendered permanent. The original formula required that the syrup should be a saturated solution of sugar. It was found in some cases that the large amount of sugar tended to disturb the stomach, and the officinal formula reduced the proportion to four-fifths of that first suggested.

Daniel S. Jones, (Am. Jour. Pharm. xvii. p. 163,) suggested that in as much as the presence of hydrocyanic acid tends to prevent fermentation, the quantity of sugar might be reduced without detriment.

In making syrup of wild cherry bark, so as to get it of the most efficiency, it is necessary to have the bark carefully reduced

the same power existed in the bark, but which was different from emulsin in being insoluble in water.

This last paper seemed to clear up the chemistry of wild cherry bark, but subsequently Dr. George B. Wood, U. S. Disp. edition 11th, 1851, suggested that wild cherry bark might owe its bitterness to phloridzine, the well known bitter principle of apple tree bark, and other species of the natural order Amygdaleæ. The author of this paper had, however, made search for such a principle in the bark of the root, the part most likely to contain it, but without success, and subsequently, at the request of Dr. Wood, when preparing his work on therapeutics, the author again made search, and adopted the following process:

An alcoholic extract was prepared which embraced the amygdalin, tannin, resin, fixed oil, and bitter principle, whatever it might be. This extract was triturated with water, and then digested with solution of gelatin in excess, which precipitated the tannin. To the liquid filtered from the tanno-gelatin, resin, and fixed oil, an excess of emulsion of sweet almonds was added, more than sufficient to decompose all the amygdalin. Tho liquid whenagain filtered and evaporated till syrupy, to deprive it of the volatile oil and hydrocyanic acid, gave no reaction with emulsin, but possessed a *decided bitterness*. When this liquid was treated in a manner favorable to crystallization no indication of phloridzine could be detected, and the conclusion arrived at was, that the bitterness is due to some other bitter principle.

In April or March, 1851, the author suggested to Mr. Joseph S. Perot, then a student of Pharmacy, that he should investigate the influence of the growing season on the hydrocyanic acid value of wild cherry bark, and thus determine the proper season for its collection, as a suitable subject for an inaugural essay. Mr. Perot having adopted the idea, carried it out by a series of careful experiments, with the following results, viz:

1000	grains of Bark	collected	April 1st,	1851,	yielded	.478	grs.	Prussic	Acid.
1000	"	"	May 20	"	"	.856	"	"	
1000	"	"	June 18	"	"	1.007	"	"	
1000	"	"	Aug. 28	"	"	1.134	"	"	
1000	"	"	Oct. 15	"	"	1.436	"	"	

These several specimens of bark were all taken from the same

sylvania (Bell's Rep. on Mat. Med. 1858.) Dr. John Redman Coxe, in the first edition of the "American Dispensatory," 1806, notices it briefly as being useful in intermittents, dyspepsia, and consumption of the lungs. He states that the bark is used by the Indians. Its merit early attracted the attention of organic chemists, and several examinations were made of its chemical character, but none of them threw much light on the constitution of the bark, till the observations of Stephen Procter, who, in an inaugural essay presented to the Philadelphia College of Pharmacy, 1834, (see the Jour. Phil. Coll. Phar. vi. page 8,) first demonstrated the presence of hydrocyanic acid in the distilled water and volatile oil, and the character of some of the other constituents. The idea of the non-existence of the volatile oil and hydrocyanic acid in this bark, when dry, was not then conceived. Mr. Procter made no chemical investigations of the oil further than to test its deleterious power when given to a cat, but his analysis exhibited the presence of starch, resin, tannin, gallic acid, fatty matter, red coloring matter, lignin, and salts of lime, iron, and potassa.

The next published observations on this bark were those of William Procter, Jr., on the "Oil of Wild Cherry Bark," (see Am. Jour. Pharm. Jan. 1838,) in which it was shown that this oil consisted of hydruret of benzyl and hydrocyanic acid, and hence was identical with oil of bitter almonds, the true nature of which had first been demonstrated by Liebig and Wohler. This paper also proved the non-existence of the volatile oil and acid in the dry wild cherry bark, but did not refer it to amygdalin, as at that date the relationship of oil of bitter almonds with amygdalin had not been discovered, although suspected by Robiquet and Boutron.

Soon after these experiments were published, the beautiful observations of Liebig and Wohler on the nature of amygdalin as the source of oil of bitter almonds, and its reaction with emulsin became known here, and taking advantage of their suggestions, the author, in an essay on amygdalin, published in October, 1838, (Am. Jour. Pharm. vol. x. 188) proved that this body also existed in wild cherry bark, was acted on by the emulsin of sweet almonds, and that some substance possessing

the activity of the root, is efficient, and when properly combined with other purgatives, as it would be in this pill, mild in its effects.

The high price of scammony, together with the fact that it is nearly always adulterated,—indeed the pure article is seldom met with in the drug market,—renders it very desirable that we should find an efficient substitute: and if it can be obtained from this,—one of our own indigenous plants,—at a comparatively low price, and of uniform composition, it will enable us to dispense with an article of such uncertain strength as commercial scammony now is.

Podophyllin is an active hydragogue cathartic fully equalling virgin scammony in effect, resembles it in the character of evacuations produced by it, and is applicable to similar diseased states of the system, and can, I think, be advantageously substituted in any of the preparations of the Pharmacopœia, in which scammony forms an ingredient.

Alexandria, Va., 1858.

AN ESSAY ON CERASUS SEROTINA—THE WILD CHERRY BARK TREE OF THE UNITED STATES.

By William Procter, Jr.

Among the many beautiful deciduous trees of the United States, the Wild Cherry holds a commanding position, as well for its large size, when fully grown, as for the graceful half-pendant character of its branches, the beautiful polished green of its leaves, and the pleasant odor and agreeable appearance of its flowers and fruit. In situations favorable to its development, it attains a height of 80 to 100 feet by 4 or 5 feet in diameter of trunk (Michaux), although from the value of its wood for cabinet purposes, large trees are rarely met with in the older sections of the Union.

The bark of the trunk and branches is the only part of the tree made officinal in the United States Pharmacopœia; although the leaves and fruit are also medicinal.

Wild cherry bark was employed by the aborigines, and early attracted attention; and in 1802 Charles Morris made it the subject of an inaugural essay presented to the University of Penn-

ish resin separated as the alcohol evaporated, without any appearance of crystalline character. This substance was re-dissolved in strong alcohol, and allowed to evaporate in thin layers on slips of glass, and when dry scraped off. This yielded the podophyllin in yellowish scales. It has an acrid, bitter taste, is neutral to test papers, soluble when heated in solutions of the caustic alkalies, frothing like solution of soap; less soluble in solutions of the carbonated alkalies: strong nitric acid decomposes it with effervescence, yielding a crimson colored liquid; sulphuric acid decomposes it; strong acetic acid does not affect it; ether separates it into two resins, proving it to be like others of the resins, compound, or composed of two proximate principles, separable by means of different solvents. I think it should be considered as one body, as that view would be in accordance with the usual practice of chemists with this class of bodies. Although it does not affect test papers, still its property of combining with caustic alkalies to form true resin soaps should entitle it to be classed with feeble acids.

That podophyllin may be advantageously substituted for extract of jalap in the compound cathartic pill of the Pharmacopœia, we have abundant evidence to believe. The object of that preparation was to combine smallness of bulk with efficiency and comparative mildness of purgative action, and a peculiar tendency to the biliary organs. Dr. Eberle, who has frequently used the root, says of it, "As a cathartic I have given the powdered root very frequently instead of jalap, and have always found it active and safe in its operation. It is, however, more drastic and apt to gripe than jalap; nor does it appear to be so prompt in its effects as a cathartic. Calomel renders its operation mild er.

Dr. Burzon says, "Its operation is slower than that of jalap, but it leaves the bowels longer in a lax and soluble condition." "The medical properties of the Podophyllum peltatum," says Dr. Bigelow, "are those of a sure and active cathartic, in which character it deserves a high rank among our indigenous productions. We have hardly any native plant which answers better the common purposes of jalap, aloes, and rhubarb."

Dr. W. P. C. Barton, and indeed all others who have used the remedy, give uniform testimony of its certainty and efficiency.

Resin of podophyllum, or podophyllin, appears to represent all

and prepared the podophyllin, and through the medium of the physicians of the Eclectic school, first introduced it as an article of the Materia Medica.

Dr. Manlius Smith, in vol. xviii. 2d series, page 306, of the American Journal of Pharmacy, describes a good method of preparing podophyllin, which is a favorite purgative with the so-called "Eclectic Practitioners." He says, two grains will purge actively persons of ordinary susceptibility, and three grains generally suffice for almost any one.

John W. Cadbury has examined the proximate constituents of this root during the present year, (1858,) and presented a paper on the subject to the Philadelphia College of Pharmacy, in March last. He prepared a portion of the resin by evaporating the alcoholic solution in a water bath to the consistence of thin syrup, and precipitating by the addition of three times its bulk of water; the podophyllin was deposited in the form of a yellowish powder. This had an extremely bitter taste, and in the dose of one quarter of a grain operates as a brisk purge. It changed color, becoming darker, if exposed to a heat above 90° F.

In conducting my examination of this root, I did not repeat the experiments of previous observers, but endeavored to ascertain by experiment, whether cold water would dissolve any of its active principle, and determine the chemical properties of it. Also, whether it contained a vegetable alkaloid.

The powdered root was exhausted by cold water slightly acidulated with acetic acid, and the liquor evaporated to the consistence of a pilular extract by a gentle heat. Of this I took, in divided doses, fifty-six grains in five hours, without any perceptible effect, hence the portion soluble in cold water or very dilute acetic acid is inert, and it would facilitate the process for preparing its active principle, to first exhaust the root with cold water, to remove inert extractive and coloring matter, soluble in that menstruum.

The powdered root, after treatment with water, was dried, packed in a displacement apparatus, and treated with cold alcohol (95°) until exhausted. This tincture was very bitter and nauseous, and of a light brown color, (the root was devoid of taste after this treatment); the tincture was passed through animal charcoal, and evaporated to dryness over a steam bath. An abundant deposit of yellow-

to isolate its active principle that I have been able to discover, until the year 1831, when the root was analyzed by W. Hodgson, Jr., and a paper on the subject read before the College of Pharmacy of Philadelphia. He announces the discovery of a peculiar proximate principle in the pale brown lustrous scales; easily pulverizable; unalterable in the air; and of a strong, permanent bitter taste, sparingly soluble in boiling water; very soluble in alcohol; partially so in ether, and when in solution possessed of an odor resembling that of the boiled root: he describes its relation to acids but not to alkalies, and considers it to resemble salicine in some of its chemical properties, particularly in affording a purple color with sulphuric acid. This principle was not experimented with in order to ascertain whether the medical properties of the root reside in it.

Dr. W. P. C. Barton, in his Medical Botany of the United States, published in 1818, gives a faithful representation of the plant in flower and fruit, and refers to the Appendix to that work for chemical analysis, that I have not been able to consult.

Dr. E. Staples has also submitted it to chemical examination, and found as constituents resin, starch, and a peculiar vegetable substance, crystallizable in white silky tufts, (this substance other observers have not obtained: it was probably salts of lime.) He does not state which is the active principle. John R. Lewis, in the year 1847, described, in an inaugural essay, the result of his observations on the root, and reports it to contain vegetable albumen, gum, starch, gallic acid, fixed oil, volatile oil, and a peculiar resinous principle, separable into parts by means of ether, slightly soluble in boiling water, entirely so in strong alcohol: when dry, resembles tannin in appearance; soluble in caustic potassa, from which it is precipitated again by an acid; soluble also in carbonates of potassa and soda; had a very bitter taste, and operating in the dose of six grains of the pure resin as a drastric hydragogue cathartic, occasioning vomiting and great debility. It was obtained in opaque feathery scales, but was uncrystallizable. The active properties of the root are considered by him to be owing to the presence of this substance in it.

Simultaneously with the analysis of Mr. Lewis, and previous to its publication, Wm. S. Merrill, A. M., of Cincinnati, obtained

heat is applied, and dexterous movements from the palm of the hand are required to prevent agglomeration; very finely pulverized sugar is added; the pan is grasped by the left hand of the operator, who with the right one manipulates the mass within and controls the heat by moving the pan from the fire to the table, as required. The first coating being applied, the coated material is disposed upon hair sieves, and placed in the drying room; when thoroughly dry, the same operation is again repeated twice over, with this difference; that a freshly prepared thick syrup of pure white sugar is employed; this last operation produces the glazing, which renders the coated material smooth and pearly.

This process requires a dexterity and skill attainable only by a prolonged experience. Less quantities than ten pounds in the pan does not succeed well.

Condite Saccharides.—Mr. Fay prepares saccharides with fresh plants, and he gives the proportion of one of the former to three of the latter.

The parts of the fresh plant is placed between folds of bibulous paper in a dry warm air for twelve hours, to deprive it of a portion of its water of vegetation; it is then beaten together with the sugar in dry white lumps, till perfect admixture is made. These are kept in opaque bottles for use.

ON PODOPHYLLIN.

By R. STABLER, M. D., of Alexandria, Va.

None of our indigenous vegetable productions are more uniformly extolled for their valuable and certain efficacy than Podophyllum peltatum; and at an early date in the history of the vegetable materia medica it attracted the attention of observers as a reliable and certain hydragogue cathartic, much resembling jalap in its effects.

Dr. Bigelow subjected it to analysis, but no efforts were made

the resulting tinctures, in the proportion of one part to eight of sugar, are prepared with advantage in the granular or pulverulent state by careful drying and subsequent pulverization; because in such a preparation the sugar retains between its molecules the active volatilizable products of such plants. A similar process is also applied to saturated tinctures prepared from dry medicinal substances, such as rhubarb, ipecac., jalap, cinchona, saffron, castoreum, musk, tolu, vanilla, etc.; the proportions of saturated tincture and sugar remaining the same, viz: 1 to 8. The manufacture of elegant lozenges, free from inert insoluble matter by means of these saccharides, is being extensively used.

Metallic Saccharides.—The saccharine carbonate of iron is an additional example of the power of sugar to protect from alteration, salts, otherwise decomposed in a short lapse of time. A French pharmacien, resident of Algeria, has furnished the following method for the transformation of these pulverulent saccharides, and in fact any pulverulent body, into granules: He mixes it into a friable paste with mucilage; this paste is placed upon a leather drum, the leather of which is perforated with holes of the required size, and gradually pressed through by means of a wooden roller. The imperfect granules are separated after the granular mass has been exposed in layers to a heat, not exceeding 110° F. The perfect ones are afterwards moistened with albumen or mucilage, and rolled in a spherical or cylindrical vessel containing a mixture of equal parts of pulverized gum arabic, sugar and starch, until an adherence is produced, or by the process hereafter described.

The method followed by confectioners for coating their sugar plums, is extensively employed by specialists engaged in the manufacture of sugar-coated pills and granules on a large scale. It is as follows: A tinned copper pan of an ample capacity is suspended by cords attached to the handles from the ceiling within three feet from the floor, at an accessible distance from a gentle fire, and of a table with a circular opening to let the pan occasionally upon it and on the fire alternately, as occasion requires. A mucilage of gum with sugar is then introduced, in sufficient quantity to slightly moisten the nucleus to be coated; gentle

cury is revived, and globules of considerable size collect at the bottom of the mortar.

NOTE.—In making the microscopic observations, the reflected light which alone could be used was not strong enough to allow the markings on the micrometer to be read. The determinations were made comparatively with objects of known dimensions.

ON SACCHARIDES.

BY EUGENE DUPUY, of New York.

By the generic name of Saccharides, we understand the intimate mixture of pure crystallized sugar with various medicinal substances, as a vehicle and protective agent of their peculiar properties.

They are prepared in a pulverulent, and also in a granular form, of various shapes and sizes, for convenient administration.

Otto Saccharides.—When an essential oil is thoroughly incorporated with a sufficient proportion of dry sugar, it is rendered much more miscible in cold water, and under the name of oleosaccharums, are familiar to many of us. The relative proportions are usually:

Essential Oil,	one part.
Cryst. White Sugar,	seventy-two parts.

Triturate intimately.

A better product is obtained, so far as relates to essential oils of the Aurantiaceæ, if, instead of proceeding as above, the sugar is employed as an absorbing rasp upon the vesicles contained on the outer portion of the rind, to almost saturation, followed by the usual trituration.

Inspissated Saccharides.—Narcotic plants have been used in the fresh state triturated with twice their weight of alcohol; and

advantage, both in extinguishing the mercury and preventing the revival of it by rubbing between the fingers. The powder, however, dries hard, and subsequent pulverization makes the mercury visible.

When prepared by washing out the soluble matter with warm water, the pasty mass spread out thinly on plates of glass to dry becomes very hard; an attempt to powder it increases the size of the globules, sometimes aggregating them so much as to be visible to the naked eye.

The difficulty of reducing blue mass to a fine powder without aggregating the globules of mercury and the hygrometric condition of the powder, due chiefly to the honey it contains, renders both the process and the product ineligible.

The following process gave the best results after a number of varied experiments:

℞.—Finely dusted Elm Bark .	1 part.
" " Sugar . .	1 "
Mercury	1 "
Alcohol	q. s.

Rub the mercury with the powdered elm bark, adding sufficient alcohol, from time to time, to maintain a pasty consistence, till the mercury is completely extinguished; then spread the ingredients on paper to dry. The mass when dry does not adhere, and is readily reduced to a fine powder; then mix in the sugar, rub till thoroughly mixed and pass through a sieve of fine bolting cloth.

As thus prepared the powder is of a light slate color—about the color of mercury with chalk; under the microscope it showed globules of mercury very evenly divided, not larger than those in the best prepared mass.

If desired, a portion of the sugar can be omitted, and replaced by finely powdered rose leaves.

As thus prepared, it is scarcely entitled to the name of powdered blue mass, but fulfils all its chemical conditions.

In rubbing mercury with powdered elm bark, wet with alcohol, the mercury is rapidly extinguished. If the trituration is continued after the powder becomes dry or nearly dry, the mer-

mercury, but the black oxide in about the same proportion as in the 3d.

From the characters of the oxides of mercury, it would appear that mercuric oxide is not formed from the direct action of the air on mercury or mercurous oxide, but results from the decomposition of the mercurous oxide by the action of moisture and light, by which the mercurous oxide is reduced in part to a metallic condition, the other part passing into mercuric oxide.

The general freedom of blue mass from black oxide of mercury, and the dry condition of the powdered mass, would seem to be unfavorable for the production of red oxide of mercury in powdered blue mass.

METHOD OF PREPARATION.

Powdered Blue Mass.—Nearly all of the powdered blue mass met with in the market is made by drying the mass, powdering, and thus making up the deficiency in weight by adding some inert powder—generally liquorice root. As thus met with, its color varies according to the degree of fineness of the powder: some of the samples examined were of a dark slate color, while others resemble in color the mercury with chalk.

Two samples obtained from good manufacturers showed under the microscope globules of mercury somewhat larger than in the mass; the globules were less evenly distributed than in the mass.

Mercury is readily extinguished by trituration with powdered liquorice root, adding from time to time sufficient water to keep it in the consistence of a paste.

The globules are not visible under a lens of two or three diameters, but if the pasty mass be rubbed between the thumb and finger till dry, the liquorice powder is rubbed out, leaving globules of mercury adhering to the fingers; when dry, the powder is in a rough coarse state; an attempt to pulverize it revives the mercury. If, instead of water, alcohol is used, the powder does not dry so hard; but, if rubbed under the pestle, globules of some size soon appear. Addition of honey to the alcohol in the proportion of one-eighth of the mercury used, is of great

the clear solution to a few drops, and add caustic potash, which will produce a yellow precipitate if any mercuric oxide is present. In this way I was enabled to detect with certainty one half of one per cent of the two oxides, when mixed with the mass. Instead of washing the mass with water, pure ether mixed with alcohol can be employed. Cold water is, however, sufficiently accurate, and allows the coloring matter to be removed more quickly. Dilute chlorohydric acid can also be used, if the red oxide alone is sought for, although a small portion of calomel is formed from the black oxide; if it is present, and dissolved, there is no conversion of any part of it into red oxide. The objection to its use is, that it takes up a much larger portion of coloring matter than acetic acid, thus disguising the effects of delicate reagents.

Blue Mass examined under a microscope shows globules of mercury, the largest of which measures about the $\frac{1}{500}$ of a millemetre in diameter ($= \frac{1}{350}$ of a line.) A specimen made ten months which had been kept from the light, but with access of air, yielded nothing to dilute acetic acid.

Another specimen, two years old, which had been preserved in a covered stone jar, yielded nothing to dilute acetic acid.

Examination of Powdered Blue Mass.

1st. A specimen made two months yielded nothing to dilute acetic acid.

2d. Specimen made eight months yielded nothing to acetic acid.

3d. Specimen made two years, and which had been preserved in a box, thus excluding light, but admitting air, was found to contain mercurous oxide; by a comparative estimate with solutions of known strength, the amount of oxide present appeared to be from half to one per cent. Repeated trials were made for the presence of red oxide of mercury, but none could be detected.

4th. Specimen, a portion of the preceding, which has been kept in a close show bottle in a window exposed to light for twelve months, and during the winter, to direct sunshine during part of the day.

The examination of this specimen detected no red oxide of

lution, but when the two are mixed, and the solution dilute, the separation and recognition of the acetate of the *red oxide* is not so readily effected.

The *acid* solution is the only reliable one which offers; for the mercurous salt if evaporated to obtain a solution free from excess of acid, is liable to conversion into the mercuric salt.

The mother water from which crystals of the neutral acetate of mercurous oxide were obtained, was found to contain acetate of mercuric oxide.

Caustic potash affords a yellow precipitate, with slightly acid solution of mercuric oxide, containing 1 part in 900 of water. The presence of a small amount of chloride of sodium or ammonium does not prevent the reaction, while the mercurous salt is precipitated by the chlorides, so that potash does not disturb the filtered solution.

When acid solutions made in the cold, of the acetates, containing a grain each to the ounce, are mixed, and a quarter of an ounce of the mixed solutions, equal to a quarter of a grain of each oxide, precipitated by chloride of sodium, the liquid closely filtered and evaporated to near dryness, at a temperature not exceeding 200° F., re-dissolved in a small portion of water divided into two portions and treated, one with caustic potash, and the other with caustic ammonia, satisfactory evidence of the presence of the red oxide is adduced; without the evaporation following the precipitation of the mercurous salts, the result is very unsatisfactory.

The process which answered best to detect the Oxides of Mercury in Blue Mass, was to wash the mass in the dark, with small portions of cold distilled water, in a small flask, by agitation and decantation, till all coloring matter and sugar was removed; then digest cold, with one part glacial acetic acid, and four parts of water; filter, and if any mercury is present, as will be shown by trying a small portion of the filtrate with sulphide of ammonium, evaporate the acetic solution at a low heat, nearly to dryness; re-dissolve in a small portion of water; precipitate the mercurous salt by a dilute solution of chloride of sodium, filter closely; render the filtrate alkaline, by careful addition of caustic potash; if any precipitate occurs, wash it by decantation in a test-tube; treat it with dilute hydrochloric acid; evaporate

pletely precipitated in a metallic state by tannic acid—the reaction occurring in the cold as well as by application of heat. The oxides are insoluble in pure washed ether, and in strong alcohol. Heated solutions of cane or grape sugar do not precipitate them from aqueous solutions. Hydrocyanic acid with black oxide of mercury throws down half the mercury and forms cyanide of mercury.

4th. Acetate of mercurous oxid is resolved by boiling water into mercury, and acid solutions of mercuric and mercurous acetate.

5th. Acid solutions of mercuric acetate are under no circumstances affected by ammonia.

6th. If the acetic acid contains alcohol, heat converts a portion of the mercuric acetate into mercurous acetate, with production of acetic ether.

7th. Chlorides do not precipitate solutions of mercurous acetate so completely that sulphide of ammonium does not affect the filtrate. Caustic potash, however, does not affect the solution after close filtration.

We have then as causes from which errors may arise in examining for oxide of mercury in blue mass,

1st. The solubility of both oxides in hot water to a notable extent, and the conversion of the oxide into metallic mercury by the tannic acid contained in the rose leaves.

2d. The solubility of calomel in highly dilute solutions, in dilute hydrochloric acid, as also in large excess of the solutions of the chlorides, thus affording no results with these reagents.

3d. The partial conversion of mercuric into mercurous acetate when heated with excess of acetic acid, which contains alcohol as an impurity.

4th. The conversion by boiling of acetate of mercurous oxide into mercury, and the salts of both oxides.

5th. Ammonia affording no reaction with the acetate of mercuric oxide when the solution is acid.

6th. The difficulty of precipitating salts of the black oxide by chlorides so completely, that the solution is not afterwards affected by alkaline sulphides.

Separation of the Oxides in acetic solution.—The oxides are readily recognized by appropriate reagents *when in separate so-*

An acid solution of mercuric acetate is not affected by caustic ammonia.

"Not in any case is it affected by ammonia, when the acid is in excess."—*Garot.*

Ammonia added carefully till slightly in excess, produces no disturbance of the solution.

Caustic potash precipitates the red oxide from the acid solution, but not so completely that sulphide of ammonium does not affect the filtrate. "If the solution is very acid, no precipitate is produced, or a very slight one."—*Gmelin.*

Acetic acid containing a small amount of alcohol, when heated over red oxide of mercury forms mercurous acetate with the production of acetic ether.

A solution of mercuric acetate, which had stood for several days, was found to afford precipitates with soluble chlorides, though it was not when prepared so affected; an examination into the cause, showed the acetic acid to contain alcohol. Alcohol was then added to a solution of mercuric acetate, and distilled. Acetic ether was obtained.

"With a neutral solution, ammonia gives a turbidity with one part of the salt in 20,000 parts of water."

Hyposulphite of soda gives with acid, as well as with neutral solutions, a lemon yellow color, changing gradually to brown. This reaction is very characteristic of the salt of the red oxide, and is quite marked in a solution containing 1 part of the salt in 6,000 parts of water. The presence of chloride of sodium, or chloride of ammonium, when the solution is very dilute, entirely prevents the reaction.

As a Summary of the Investigation, we have the following:—

1st. Mercury, when pure, is not affected by any exposure to which it is liable. In a state of minute division it is not acted on by boiling glacial acetic acid, and yields nothing to cold muriatic acid, when highly diluted.

2d. Black oxide of mercury is soluble to a very appreciable extent in hot water, the solution, when cold, still retaining a portion of the oxide. The oxide as prepared both by the U. S. Pharmacopœia and the process of Duflos, contains metallic mercury and red oxide of mercury.

3d. The oxides of mercury in solution in water are com-

decanting allowed to stand twenty-four hours, gave a much stronger reaction with alkaline sulphides, than was obtained from the cold solution. But the reaction is more feeble than with the black oxide.

Tannic acid precipitates the mercury from the aqueous solution of the red oxide as metallic mercury. This reaction takes place in the cold, but more quickly when heated.

Red oxide of mercury is completely insoluble in cold alcohol of 95 per cent., also insoluble in concentrated sulphuric ether (free from acid) when saturated with water.

Mercuric oxide gradually blackens when exposed to sunshine, "being resolved (according to Guibourt,) into oxygen and metallic mercury," or according to Donovan, "into oxygen and mercurous oxide."

"Heated solutions of sugar reduce it (according to Vogel,) to mercurous oxide."

Under a microscope, mercuric oxide shows translucent orange-colored crystals.

Acetate of Mercurous Oxide "is soluble in one hundred and thirty-three parts of water, at 53 or 59° F., but is not soluble in cold alcohol. When boiled with water, it is resolved into 11 per cent. of mercury, and a solution of mercuric and mercurous acetate containing excess of acid."—*Garot.*

"Sugar converts it into mercury, and black oxide."—*Vogel.*

Both acid and neutral solutions of mercurous acetate are decomposed by ammonia, hydrochloric acid, and the soluble metallic chlorides "visible even to the 80,000 degree of dilution." (*Pfaff.*) The precipitates by hydrochloric acid, and the chlorides in highly dilute solutions, are completely soluble in excess of the precipitants when heated, the solutions remaining nearly clear when cold. The solubility of the precipitates is more apparent from the acid than from the neutral solution.

The chlorides do not precipitate an acid or neutral solution, so that the filtrate is not affected by sulphide of ammonium; it is not, however, affected by potash.

Acetate of Mercuric Oxide "is soluble in four parts of water at 50° F., and in 2.75 parts at 65° F."—*Garot.*

"Boiled with sugar it is converted into mercurous acetate.—*Vogel.*

chloric acid, (one part of acid, sp. gr. 1.12, and seven parts of water,) the filtered solution evaporated to dryness, and re-dissolved in warm water, afforded a yellow precipitate with caustic potash. When treated with dilute acetic acid and the mercurial salt precipitated by chloride of sodium, the filtrate evaporated to a small bulk also gave a yellow precipitate with caustic potash.

Whether chlorhydric acid takes up anything from black oxide of mercury, when pure, could not with certainty be determined, owing to the difficulty of obtaining a pure black oxide. The partial solubility of calomel in dilute HCl., prevents the application of delicate reagents.

According to Guibourt, "it is impossible to procure this oxide pure, because, during washing, even in the dark, it is resolved into a mixture of protoxide and metallic mercury. Light, even diffused daylight, or a gentle heat, resolves the dioxide into metallic mercury and the protoxide."

Black oxide of mercury prepared by Duflos' method, examined under the microscope by reflected light, shows metallic globules varying from the 1-800th of a millimeter, down to the smallest points visible under a power of 163 diameters. The globules are smaller, and more numerous than in the oxide prepared from calomel.

"Hydrocyanic acid added to mercurous salts throws down half of the mercury, and forms cyanide of mercury."—*Rose.*

Red Oxide of Mercury.—The commercial red oxide, which was preserved in the dark, was employed in the following experiments:

"Aqueous mercuric oxide is slightly soluble in water."—*Thompson, Guibourt, and Donovan.*

"The oxide obtained by use of nitric acid, and the precipiated oxide dissolves sparingly in cold, somewhat more abundantly in hot water."—*Anthon.*

Water digested at 60° F. on red oxide of mercury, gives an evident reaction with sulphide of ammonium; at 212° F. a much larger portion of the oxide is taken up, giving a deep brown color on addition of sulphide of ammonium.

Water which had been heated over the red oxide, and after

is produced, changing to yellow more slowly than when heated; after standing twelve hours, mercury in a metallic state is deposited, and the solution is no longer affected by sulphide of ammonium.

Black Oxide of Mercury, prepared from calomel by the process of the U. S. P., examined under a microscope by transmitted light under a power of near three hundred diameters, appeared as an amorphous powder. When placed on an opaque object, and examined by reflected light under a lower power, numerous globules of metallic mercury are seen, the globules varying from the 1-400th of a millimeter in diameter, down. The mercury is visible in a strong light under a good pocket lens, magnifying two diameters.

According to Donovan, "if too little caustic potash be added in the first instance to calomel, there is formed a basic hydrochlorate of mercurous oxide, which abstracts oxygen from the separated oxide, and is itself converted into basic hydrochlorate of mercuric oxide, so that a farther addition of caustic potash produces a mixture of deutoxide, protoxide, and metallic mercury."

Duflos prepares black oxide of mercury "by adding one part of caustic potash lye to twelve parts of absolute alcohol, and decanting the liquid from the resulting precipitate. 11-12ths is mixed with a solution of mercurous nitrate, constantly stirring till the liquid slightly reddens litmus paper, the remaining 1-12th is then added, and the precipitate left to subside, it is then decanted, washed with water, and dried at a moderate heat in the dark. The mercurous oxide thus obtained is black, with a tinge of yellowish brown, giving up nothing to dilute hydrochloric acid, but dissolves completely in strong acetic acid."

Mercurous oxide was prepared according to Duflos' method, care being taken to have the nitrate of mercurous oxide free from mercuric nitrate; when digested at 80° F. with pure hydrochloric acid, sp. gr. 1.12, diluted with an equal bulk of water, it was almost completely converted into calomel. The acid solution was filtered and evaporated to dryness on a watch-glass, a few drops of water added, and a drop of dilute sulphide of ammonium. A *black* precipitate was immediately produced.

Duflos' black oxide of mercury was treated with dilute hydro-

and filtered while warm, five grains of conf. of rose were added and boiled; after close filtration, the liquid ceased to be disturbed by sulphide of ammonium.

The precipitated matter, when warmed with dilute nitric acid, gave a brown color, with sulphide of ammonium.

5th. Hot distilled water holding the oxide in solution, was not deprived of it by boiling with cane or grape sugar.

6th. To a warm solution of the oxide in distilled water, tannic acid was added, the solution immediately assumed a red color, changing to pale yellow when boiled. After standing some hours, a slight deposit took place; examined under a glass of considerable power, it had the appearance of a minutely divided powder of a grey color, without lustre. The precipitate was collected on a small watch-glass, washed with alcohol to remove any organic matter, and dried; when rubbed with the point of a knife, metallic globules, visible to the unassisted eye, were collected. The liquid, from which the deposit was obtained, ceased to be disturbed by sulphide of ammonium.

7th. One part of the oxide was added to three thousand parts of distilled water, and boiled in a flask; when nearly cool, half of one part of tannic acid was added; a glass tube was tightly adapted to the mouth of the flask, with the remote end dipping to near the bottom of a test tube, containing a clear solution of caustic baryta. The mouth of the test tube was closed by a stopper of cotton, to prevent free access of air; when the contents of the flask were heated, the color passed from red to pale yellow; the bubbles passing through the baryta solution caused it to become turbid; addition of nitric acid caused effervescence, and the solution became clear.

To prove this experiment, it was repeated, omitting the tannic acid; the baryta water did not show any indications of carbonic acid, from the contents of the flask.

The solution containing the oxide after treatment with tannin, did not coagulate gelatine; a solution of tannin of the same strength, (half grain in three thousand grains of water,) manifested decided results with gelatine.

When tannic acid is added to water, which has stood twenty-four hours after boiling over the oxide, an immediate red color

2d. *Mercury in a state of minute division*,—as precipitated from its solutions by protochloride of tin,—was not affected by glacial acetic acid when heated over it, and yielded nothing to hydrochloric acid, sp. gr. 1.12, diluted with seven volumes of water.

3d. *Black Oxide of Mercury*, of the U. S. Pharmacopœia, (mercurous oxide), was prepared by acting on hydro-sublimed calomel by caustic potash in excess, washing the oxide till the washings were no longer disturbed by nitrate of silver, and drying in the dark. While washing the calomel previous to acting on it by potash, it was observed that the washings were affected by both nitrate of silver and sulphide of ammonium, a fact which was subsequently found to be stated by Mailhé, who gives the solubility of calomel in various solutions of the alkaline chlorides. It is also stated by Simon, that calomel is taken up by boiling water.

Black oxide of mercury was found to be soluble to an appreciable extent in distilled water at 60° F., giving an evident reaction with sulphide of ammonium. At 212° F., distilled water takes up a much larger quantity, affording a deep brown color with sulphide of ammonium, and a white turbidity, with solutions containing half grain to the ounce of chloride of sodium, or chloride of ammonium, but is not disturbed by hydrochloric acid.

The precipitates afforded by the chlorides were insoluble in the cold in an excess of the precipitants, but were completely re-dissolved by dilute hydrochloric acid. [Hydrochloric acid, when diluted so as to merely redden litmus, did not disturb the solution of the oxide.]

Water boiled over the oxide, and allowed to stand several days, contained more of the oxide in solution than was taken up at 60° F.

Black oxide of mercury is insoluble in cold alcohol of 95 per cent., also in concentrated sulphuric ether, (when free from acidity.) Ether saturated with water does not dissolve a trace; cold water saturated with ether dissolves an amount which may be readily detected.

4th. To distilled water, which had been boiled over the oxide,

5. That the question whether the fermentation of the curing process increases the proportion of nicotina, as alleged by some writers, or decreases it by generating ammonia at its expense, as would appear from the imperfect results of the last experiment above, is yet to be determined.

MERCURY—ITS OXIDES AND ACETATES IN REFERENCE TO THE EXAMINATION OF BLUE MASS, AND REMARKS ON BLUE MASS.

By Charles Bullock, of Philadelphia.

Much of the powdered blue mass of the shops is prepared by the simple process of drying and powdering. An examination of the character of the mass from which samples of the powder were obtained was, therefore, desirable, to judge properly of the changes it had undergone after pulverization.

For this purpose, a sample of the mass prepared 18 months was examined for oxides of mercury. The process adopted was that of former examiners. The mass, after treatment with successive portions of hot distilled water to remove the soluble matter, was boiled with dilute acetic acid. The filtered liquid evaporated to a small bulk, gave no indication of mercury when treated with sulphide of ammonium.

To one hundred grains of blue mass, one grain of black oxide of mercury was added, and the experiment repeated; not a trace of oxide of mercury could be detected by the process.

From results so unsatisfactory, I was induced to make some examination to determine the cause of error, and to arrive at a reliable method of detecting small amounts of oxides of mercury, when mixed with a large bulk of organic matter.

To show more fully the character of mercury and some of its salts,—claiming attention in connection with blue mass,—I give, in addition to my experiments, the observations of some others.

1st. *Metallic Mercury* "remains unaltered, when agitated for any length of time with oxygen, common air, nitrous oxide, nitric oxide, carbonic acid gas, or alcohol."—*Proust & Vogel.*

time, as the process proceeded. Their color became brown, and greenish brown, a strong, rank odor analogous to that of commercial tobacco was developed, and the chlorophylle nearly all destroyed. Ammoniacal fumes could also be detected by the nose, and by a rod dipped in muriatic acid. This process was only partially effected in the period of ten days, which was all that could be allowed to it. The leaves were now bruised and macerated in acidulated diluted alcohol 12 hours, expressed, saturated with magnesia, agitated and filtered. The expressed liquid was brown instead of green, as in the preceding case, had a rank odor like that of commercial tobacco, though different, which became more marked after its saturation with magnesia. This liquid was then evaporated very carefully till reduced to two fluid ounces, saturated with magnesia, filtered, and then distilled with great care till reduced to one fourth. The object of this experiment was to ascertain approximately, whether the fermentation of tobacco decreased or increased its nicotin. When the distillate was tested parallel with the preceding series, the results were found to differ in some respects. Tannic acid afforded *no precipitate*, and chloride of gold a very slight yellowish disturbance. The reactions with the other tests were apparently the same as from the distillate of the green leaves. From a consideration of the results of this experiment it is inferred that the fermentation had generated ammonia, and this at the expense of the nicotina, although the quantity operated on, and the imperfect manner in which the fermentation was conducted, do not justify a positive conclusion. The presence of a very little ammonia in a solution of nicotina prevents its precipitation by tannic acid, but at the same time causes a reddish coloration of the solution, an effect which did not occur in this experiment.

In conclusion, it may be inferred from these experiments,

1st. That tobacco seeds, if poisonous, probably owe their power to some other principle than the nicotina of manufactured tobacco.

2. That these seeds contain about one third of their weight of fixed oil.

3. That nicotina exists as such in growing tobacco leaves.

4. That these experiments do not determine the relative amount of nicotina in green and cured tobacco leaves.

limate. 4. Brownish yellow, insoluble in an excess, by aqueous solution of iodine. 5. A yellowish precipitate by terchloride of gold. 6. A brown precipitate by sesqui-chloride of iron. 7. Acetate of copper, a blue precipitate.

2. Eight ounces of the leaves, perfectly fresh, were sliced and bruised, mixed with half their weight of alcohol containing 16 drops of sulphuric acid, and left for three days, when the liquid was expressed, evaporated to four fluid ounces, saturated with magnesia and filtered. The liquid was then distilled till four-fifths had passed. The distillate was now tested parallel with a solution of nicotina, the strength of which, though dilute, was probably greater than that obtained in the experiment; besides, it should be borne in mind that the distillate could not claim to be a pure solution. It was decidedly alkaline to test papers.

Alkaline distillate from green Tobacco.

1. Tannic acid produced a white precipitate, soluble in acetic acid.
2. Corrosive sublimate occasioned a white precipitate.
3. Acetate of lead caused a white precipitate.
4. Sesquichloride of iron, not in excess, a brown precipitate.
5. Chloride of gold a reddish yellow precipitate.
6. Aqueous solution of iodine causes a yellowish cloudiness, which is soon decolorized by standing.
7. Sulphate of zinc occasions a white gelatinous precipitate.
8. Chloride of cobalt causes a pink colored precipitate.
9. Bichloride of platinum causes a yellowish coloration, but no precipitate, owing to the great dilution of the solution.

Solution of Nicotina.

1. Tannic acid caused a white precipitate dissolved by acetic acid.
2. Corrosive sublimate caused a white precipitate.
3. Acetate of lead produced a white precipitate.
4. Sesquichloride of iron, when nicotina is in excess, a brown precipitate.
5. Chloride of gold a yellowish colored precipitate, inclined to red.
6. Aqueous solution of iodine caused a discoloration, which, by standing, became colorless.
7. Solution of nicotina causes a white curdy precipitate in solution of sulphate of zinc.
8. Chloride of cobalt occasions a slight pinky precipitate in very dilute solution of nicotina, but a stronger solution causes a blue precipitate, which becomes green by standing.
9. Bichloride of platinium causes a yellow precipitate in a strong solution of nicotina.

It will be seen by a comparison of the above reactions, that they agree very closely except in the case of cobalt, which is not accounted for, unless the solution is too dilute to react.

3. Four ounces of tobacco leaves were deprived of their mid rib, laid in the sun till wilted, and then folded up into a close mass and kept in a jar, in a warm place, to induce fermentation, which gradually supervened, the leaves being opened from time to

effects of nicotina on a cat are described, but unfortunately it is not stated whether that derived from green tobacco was so tried or not, and the subject is left in doubt.

Dr. Gregory in his Organic Chemistry, (London, 1856, p. 411,) ventures the following remark without supporting it by any authority or experiment. "It is probable that nicotina, besides being found in the fresh leaves of tobacco, is produced in larger quantity during the fermentation to which the leaves are subjected in the manufacture of tobacco." This is an important assertion, as the following experiments will exhibit.

The tobacco plants furnishing material for these experiments were about five feet high, in bloom, the lower leaves varying from 15 to 20 inches in length, and in all respects in good condition. They were grown in the garden of Dr. Wood, and to insure careful results were taken up with roots and earth and transferred to my own premises, where their vegetation continued until the seeds were formed—the leaves being removed from time to time, as they were wanted.

In experimenting with the leaves in their green state, the menstruum chosen has been diluted alcohol, so as to avoid all possibility of fermentation developing an alkaloid not pre-existent. It was also ascertained that the leaves lost 89 per cent. in drying, so that they represented only about one-ninth of their weight when dry.

1. Four ounces of green tobacco leaves were sliced and bruised, mixed with four ounces of alcohol, allowed to macerate 36 hours and expressed. The alcohol was removed by evaporating the liquid to two fluid ounces, an excess of magnesia was added to to set nicotina free, if present. The filtered liquor was quite dark colored and strongly odorous, narcotic, but different from that of ordinary tobacco. This liquid was poured into a distillatory apparatus and three-fourths of the liquid drawn over by distillation. The distillate had a slight yellowish tint, was strongly odorous, much like that obtained from the seed, yet not the same. It had an alkaline reaction with test papers, and its odor disappeared in great measures by saturation with an acid. The distilled liquid afforded the following reactions with tests:—1. It was precipitated white by tannic acid, and hence was not ammonia. 2. White by acetate of lead. 3. White by corrosive sub-

5. Terchloride of gold, no precipitate at first, but by standing, a brown one.
6. Aqueous solution of iodine, no precipitate, and instantly decolorized.
7. Iodurетted iodide of potassium, at once decolorized, and no precipitate.
8. Sulphate of zinc, a white precipitate.
9. Chloride of cobalt, a pink flocculent precipitate.

It is evident, by comparing this series with that of nicotina in the sequel, that the alkalinity of the distillate from the seeds is not due to that alkaloid, and, as the proportion of seeds was far greater than in any of the experiments with the leaves; it follows that the yield of nicotina, had it been present, should have been greater; whereas the liquid was not as alkaline as that from the green leaves.

The reactions above indicated are, many of them, those of ammonia, but that with cobalt is different, and the nature of the active principle of the seeds, or indeed its real activity, remains undetermined. It would have been well to have tried some physiological experiments with tobacco seed, to see if they are *more* active than the leaves. If they are more active, and possess the same acro-narcotic power, then it would be well to seek for their active principle in another direction than that of a volatile alkaloïd. The first experiment detailed above was in this view, but was not continued.

Tobacco leaves.—Before proceeding to remark on any results with green tobacco, it is proper to state that an Essay on Tobacco by Joseph C. Turnpenny, published in 1833, (Jour. Phila. Coll. Pharm. v.) gives an account of some experiments with green tobacco leaves, in which the recent leaves were macerated three days with water and acidulated water, and then after saturation with magnesia were distilled. The distillate in each instance had an alkaline reaction, smelled strongly of tobacco and had an amber color, and when agitated with ether ceded to that liquid a small quantity of brownish matter. This he deemed to be narcotic, owing to its odor and alkaline reaction. The characteristic tests for nicotine were not applied, because at that time they were not known. A subsequent experiment detailed the results with Kentucky tobacco of commerce, and afterwards the

was now agitated with washed ether several times, and the ethereal liquid, after decantation, evaporated. A small quantity of brown semi-fluid matter resulted, devoid of alkaline reaction on reddened litmus paper, and only partially soluble in water.

3. Four ounces of the bruised seeds were exhausted with hot diluted alcohol slightly acidified with sulphuric acid. The tincture was evaporated to two fluid ounces, half an ounce of liquor potassæ added, the mixture poured into a retort previously adapted to a receiver, and heat applied until three-fourths of the liquid had distilled. The tendency to froth was so great, that caution was required in conducting the distillation, and fearing that the distillate might be slightly contaminated with the alkaline liquid in the retort, it was redistilled in a clean apparatus. Thus obtained, the distillate had a strong peculiar odor, a decided alkaline reaction, but did not answer satisfactorily to the tests for nicotina. It was not precipitated by tannic acid, sesquichloride of iron or chloride of gold, but readily by acetate of lead and corrosive sublimate.

4. The third experiment not being satisfactory, and fearing that the excess of potassa may have interfered with the result, it was determined to proceed with more caution. Eight ounces of the seed, well bruised, were macerated in acidulated diluted alcohol for 48 hours, and then digested for three or four hours; renewing the liquid as it evaporated, when the whole was thrown on a displacement filter, and the seed exhausted. The liquid was evaporated to four fluid ounces, mixed with a drachm of magnesia, and agitated at intervals for 12 hours, when it was filtered. Previously to the addition of the magnesia the liquid had but little odor or color: after the action of that base it had a brown color and decided unpleasant odor, similar to that in the preceding experiment. This liquid was carefully distilled until three-fourths of its bulk had passed. The distillate was decidedly alkaline to test paper. It was now carefully tested for nicotina, with the following results:

1. It was *not* precipitated by tannic acid.
2. Corrosive sublimate caused a white precipitate.
3. Acetate of lead occasioned a white precipitate.
4. Sesquichloride of iron, a brown flocculence.

ON THE EXISTENCE OF NICOTINA IN GREEN TOBACCO.

By William Procter, Jr.

At a meeting of the American Pharmaceutical Association, held in Philadelphia, Sept., 1857, the following question was suggested for solution, viz.:

"Liebig (Agricultural Chemistry, Amer. edition, page 184) says that the nicotina of commercial tobacco does not pre-exist in the growing plant, but is the result of the fermentation set up during the curing process. *Question.*—If this be true, what is the active principle of green tobacco, and what relation does it bear to nicotina?"

Having accepted this investigation, the author found himself unable to proceed for want of the material, and consequently had to delay it till the tobacco plant bloomed at Philadelphia early in August of the present year. Meanwhile, however, it was determined to examine the seeds of tobacco, assuming them to be the most active part of the plant, judging from analogy as regards lobelia, stramonium, hyoscyamus, etc. Through the the kind offices of Mr. T. Roberts Baker, of Richmond, Virginia, two pounds of the seed, in good condition, were procured last spring.

Tobacco seeds are exceedingly diminutive, of a brown color, and, as viewed through the microscope, are covered with protuberances at intervals over their surface, but are not reticulated as is the seed of Lobelia inflata. 1. They contain 33 per cent. of fixed oil, which may readily be extracted by ether, which also takes up a little resin easily separable from the oil in evaporation. This oil has a light brownish color, easily oxidizes by exposure, and, like the oil of lobelia seed, possesses the drying property. The odor of the recently bruised seed recalls that of castor oil beans when bruised, though not so decided.

2. Four ounces of the bruised seed were macerated in alcohol of 65 per cent. for two weeks, and displaced to get two pints of tincture. This was evaporated to a syrupy extract heated with a fluid ounce of water, and forty grains of magnesia. After occasional agitation for 24 hours the liquid was filtered. Its color had changed darker, and a decided odor developed. It

by this process is completely exhausted, leaving nothing behind but woody fibre, starch and other inert matter, may be reserved for mingling with the resins and gum-resins. The idea has sometimes occurred to me that it would not be out of place to prepare for this purpose, as a general resort, fine saw dust, by treating it with alcohol and water to remove all soluble matter—the alcohol used in this treatment being appropriated to some suitable use. Fortunately the substances requiring this sort of management are few.

The conditions, then, on which I conceive depend the success of the displacement process, may be stated to consist; 1st, in the substance being uniformly and finely divided, prepared by contusion, and sifting through sieves ranging in fineness from forty to sixty meshes to the linear inch; 2d, the dampening of the powder without wholly destroying its pulverulent condition; 3d, the proper packing of this previously dampened powder in the displacement apparatus, which should be firmly done when admissible.

In conclusion, the great advantages of the displacement process, as thus conducted, consist in the facility it affords of obtaining very concentrated solutions of vegetable substances, in a comparatively short period of time; by which we are enabled to prepare at short notice the various officinal tinctures, syrups and extracts; and in this latter case it is especially useful on account of the first portions of liquid which pass containing most of the activity of the substance thus treated, which should be reserved for separate evaporation without long exposure to heat and consequent injury.

general rule considerable pressure may be used with most substances, but, as before stated, the operator will soon learn to distinguish the requisite condition in this respect.

The dampened powder should then be immediately transferred to the percolater, and *all* of it thus transferred before any pressure is exerted upon it, so as to ensure the powder to be of uniform condition throughout; which cannot be the case if one portion of it is packed before adding another; as the first may not only be packed more tightly or more loosely, but, in consequence of evaporation during packing, will be dryer than the portion which is to be added, and all combined will tend to direct the permeation of the fluid unequally; and consequently the process cannot progress successfully.

If it is desired, as in some cases may be necessary, as with wild cherry bark, to permit the full effect of the water or other menstruum, in the development of the active principle, it may be accomplished by adding only a small portion of the menstruum to the packed powder—a quantity that will be absorbed by the powder, but insufficient to produce dropping; and, at the proper time, make the further additions of liquid.

When it is not thus requisite for any peculiar action of the menstruum, the whole quantity of liquid (or to the capacity of the instrument) may be added at once on the surface of the packed powder, arranged in the manner before stated.

Should a funnel be used, it will be necessary to lay across the top a piece of oiled silk to prevent evaporation.

In the treatment of some substances, as opium, myrrh, &c., it is necessary to mingle with them some suitable material for the purpose of properly dividing them so as to be acted upon uniformly by the menstruum, and facilitating the process.

Frequently, in compound preparations wherein these substances may enter, the necessity is supplied by the other ingredients of the compound. Sand, which is usually recommended, does not appear to be quite the thing needed; something of a penetrable character more in unison with the substance itself, is what is required, and ofttimes we may have something at hand which will supply this want—poppy capsules in powder, for instance, will answer well for opium; and with a view to economy, the residue of ginger, in the preparation of fluid extract or tincture, which

comparatively short time—frequently several hours less than is directed for previous maceration by the Pharmacopœia—the powder will be left in the displacer completely exhausted of its soluble matter.

By this means highly concentrated solutions are obtained, an advantage gained by this small addition of liquid to the powder; at first, in connection with the manner of packing, which will be referred to presently, and may be explained thus: the quantity of liquid absorbed being minute, on the subsequent addition of the menstruum it is displaced, and other particles becoming saturated in quick succession dispose the substance to yield up its soluble matter to the least possible amount of solvent. The liquid, by this means of treatment having permeated the particles of the mass, without having had any of the particles diffused or suspended in it, will necessarily escape from the instrument perfectly clear as already stated, and almost of a syrupy consistence; and for obvious reasons should not be returned to the mass, as is frequently requisite when the usual manner of previous maceration is resorted to.

The manner of adding the liquid may be worthy of some notice. I have found it best to distribute the liquid over the powder, in portions, the quantity generally not more than one-fourth of the substance under treatment, frequently less, especially with such substances as rhubarb, gentian, &c., and with my finger or whole hand, according to the quantity, rub it through the powder uniformly, the state of this being the guide for the proper quantity, which should never be sufficient to produce a soft mass, but merely to dampen the powder without causing it to lose entirely its mobile condition. In this state the operator will be able to judge, at once, by the feel of the powder, respecting the next step of the process—that of packing—whether it should be performed with little or much pressure. If the powder should, when thus moistened, manifest a tendency to adhere much among its particles, the packing should be performed with moderate pressure only, and in some instances scarcely any, especially with an aqueous solvent; if, on the other hand, this adhesiveness should not exist, and the particles of the powder move freely upon each other, as with many alcoholic and hydro-alcoholic liquids the pressure should be considerable. As a

rily vary; with most substances, one of about sixty meshes to the inch, especially for tinctures, will be found best adapted, while with some other substances, such as rhubarb, gentian, &c. one of about forty meshes will be preferable.

The state of comminution to which substances are brought previous to treatment by percolation, I conceive to be one of the most important conditions of a successful result. Next in importance to this, is the amount of menstruum added to the powder previous to packing it in the apparatus.

As in the previous case, I have also in this, to depart from the rules laid down in standard works treating of this subject; for this condition regulates, in a great measure, the next, and last important feature to be observed, that is, the packing of the powder in the apparatus.

As already referred to, the officinal directions, as well as common usage, imply the necessity of sufficient of the menstruum to be added, to form a soft, pulp-like mass with the powder, and in some instances a much larger quantity; and suffer the mixture to stand some time before transferring to the percolator. It is almost impossible to so regulate the packing of the powder when in this condition, as to produce that uniform and steady permeation of the liquid through the mass, so essential to complete success. Hence it is, that instruments furnished with stopcocks or other arrangements, are recommended to control the flow of liquid; an appendage to the apparatus wholly unnecessary, as the process, when properly begun, is its own regulator with unvarying certainty.

Contrary to the prescribed rules in this particular, my plan is to add just sufficient of the solvent to dampen the powder, scarcely destroying its pulverulent condition, regardless whether the substance be liable to much swelling on imbibing the liquid, or not; the object being to enable it to pack properly, and at the same time to contain sufficient moisture to produce capillary attraction to conduct the liquid; by which means the fluid with which the powder was moistened, on the subsequent addition of the menstruum to the packed powder in the percolator, is driven forward very highly charged with soluble matter, and escapes at once, perfectly clear, followed in regular and uniform succession by liquid more or less strong as it advances; and in a

liable and advantageous? It may not be out of place, in the first instance, briefly to allude to the apparatus. This may be of various materials, as metal, glass, porcelain, &c., and either cylindrical or slightly conical, terminating somewhat funnel-shaped, and with or without a diaphragm, as this can be supplied with a substitute of carded cotton.

For almost all the operations of the pharmaceutist, except in a few instances, when a larger apparatus is required, I know of no instrument that answers the purpose better than the common glass funnel; funnels less cone-shaped than would be selected for filtering purposes, ordinarily termed badly shaped funnels, and which can be had at a very trifling expense. These may be arranged for an apparatus by having the upper part of the neck filled with carded cotton on which the material rests; over this a piece of perforated paper is placed, and in some cases there will be an advantage in placing on the paper a piece of perforated tin, having a small knob in the centre, by which to handle it. I recommend the funnel, because, in the first place, it is always at hand, and, if not, can be supplied at so little cost; and secondly, because I know that its form does not impede the process, although some have so asserted; and lastly, because, being glass, it enables the operator to watch the process, and see whether or not it is progressing satifactorily. On this latter account I prefer glass instruments before all others. In very large operations the form of the apparatus may be adapted to the occasion, as the experience of the operator may suggest. Even in operating with volatile fluids, such as ether, spt. ammon. arom., &c., in the absence of a better instrument, the funnel may be made to answer by tying over the top a piece of oiled silk and inserting the neck tightly in a cork arranged to receive it.

Having procured the proper form of apparatus, the next consideration is the degree of comminution to which to reduce the material we wish to operate upon. An experience of many years in treatment by percolation, induces me to recommend, in all cases, that the substance be brought to a state of fine division, of uniform character, particularly those which are of a firm and hard texture; but in all instances, the material should be passed through a sieve. The size of the sieve will necessa-

liquid should be sufficient to form a soft, pulp-like mass with the powder."

These quotations, which I make from the U. S. Dispensatory, convey the idea of the general mode of conducting the process; some authors advise that when maceration has been omitted, the first portions of liquid should be returned until they appear nearly saturated.

From these, and other recommendations of a similar character, both written and carried out in practice, it appears to me that the idea of displacement, in many instances, consists merely in first almost completing the process of extraction by maceration, and then separating the liquid retained by the dregs, by washing them.

This mode of operating, I think, detracts entirely from the advantages which are to be gained by the process. If I have a just conception of the principle upon which it is based, it is, that the substance to be treated, and the menstruum, should be presented to each other under such circumstances, that each particle of the solvent shall be fully charged with soluble matter, and immediately displaced with another particle, to become in its turn more or less saturated in like manner; and if all the conditions of the process have been properly observed, these saturated particles collect and escape from the apparatus, as containing to the fullest possible extent all that the menstruum is capable of taking up, and even more than could be taken up by any other means. The great beauty and excellency of the process I consider to be in the concentrative power, rapidity and efficiency of its operation. It is frequently very desirable to obtain quickly solutions at once, so concentrated, as to possess nearly or quite all that is active in the substance under treatment, and which in quantity is sometimes less, and often not more than would be sufficient to thoroughly moisten the substance, in accordance with the officinal directions; and being thus diffused through the mass it cannot be so completely displaced, and at the same time the material so thoroughly exhausted, as it could be if the process was conducted under other circumstances.

What then are the circumstances so favorable to the successful prosecution of the process, in the attainment of results so re-

required quantity of filtered liquor is obtained. If the liquor which first passes should be turbid, it is to be again introduced into the instrument. Care must be taken that the powder be not, on the one hand, too coarse or too loosely pressed, lest it should allow the liquid to pass too quickly; nor, on the other, too fine or compact, lest it should offer an unnecessary resistance. Should the liquid flow too rapidly, it is to be returned to the instrument, which is then to be closed beneath for a time, in order that the finer parts of the powder may subside and thus cause a slower percolation."

The authors of the U. S. Dispensatory, after alluding to the advantages of the process, go on to say, "it is, however, liable to the objection that considerable experience and skill are necessary to carry it properly into effect, and that if improperly performed, it must often result in preparations very different from those contemplated in the formulæ. It should not, therefore, be resorted to in the fulfilment of officinal directions, when any alternative is given, unless by individuals who have acquired the requisite skill by much practice." I will endeavor to make manifest, in the sequel, that this deficiency in skill is not so much owing to the want of great practice as it is to the want of starting with correct ideas as to the mode of operating, and of the principle upon which the operation is based.

After enumerating the sources of failure, the same authors state as a means of avoiding them, "that the solid material should in general be in a state of a uniform, coarse powder. If its texture, however, be very hard, firm, and not easily permeable by moisture, as in certain barks, woods, and ligneous roots, it should be rather finely powdered. If, on the conratry, the texture be loose and spongy, and especially if the material be disposed to swell up and form a viscid mass with water so as to impede percolation, as in the case of gentian and squill, it may be advisable merely to bruise it in a mortar, though care should be taken to do this as equably as possible; and the substances which require this treatment when water is used, may come under the general rule with another solvent, as alcohol or ether. It is generally advisable, before introducing the material into the instrument, to mix it with a portion of the solvent, and allow it to stand for some time in another vessel. The quantity of

syrups; which conclusively proved the superiority of the process to all others in use.

In the mean time the system had been very extensively introduced into France, and its application attended with almost invariable success. From this time the method gradually gained favor with intelligent pharmaceutists, until it has now become the leading process for most of the preparations to which it is applicable.

Notwithstanding the favorable reception it has met with, and its almost universal adoption by the pharmaceutists of this country, there exists a great variety of opinion as to the best mode of conducting it. As a consequence of this, it too frequently occurs, that, instead of the substance treated being quickly and completely exhausted of its soluble constituents, much delay and imperfect exhaustion to the production of weak and inefficient preparations are the results.

This irregularity in the operations of the process is entirely due to the condition in which the dry materials and the menstruum are presented to each other at the commencement; and if these conditions are once properly understood and adhered to, the merest tyro in the business is capable of conducting it.

It appears to me that the directions generally laid down with reference to the manner of conducting the process, are calculated to lead the beginner into difficulty, and produce the consequences already alluded to. Thus, the general officinal directions of the Pharmacopœia, after describing what form of apparatus should be used, give the following instructions as to the mode of procedure: "The substance to be acted upon having been reduced to a coarse powder and mixed with enough of the menstruum to moisten it thoroughly, is, after a maceration of some hours, to be introduced into the instrument and slightly compressed upon the diaphragm. Any portion of the macerating liquid which may not have been absorbed by the powder, is afterwards to be poured upon the mass in the instrument, and allowed to percolate. Sufficient of the menstruum is then to be gradually added to drive before it, or displace, the liquid contained in the mass; the portion introduced is in like manner to be displaced by another portion, and so on until the

The first essay relating to the subject, to my knowledge, brought especially to the notice of American pharmaceutists, was by M. A. Guillermond, and transferred from the Journal de Pharmacie of the French, to the pages of the American Journal of Pharmacy, vol. vii. page 308, in the year 1836, wherein is exhibited a series of experiments with various substances, treated by maceration, maceration and displacement and simple displacement, arranged in contrast with each other; from which the author concluded "that whenever displacement can be used, the advantage will be incontestable, from the quality of the products, the economy in the menstruum, and the simplicity of the operation."

"That the process is generally advantageous with substances containing but little mucilaginous matter, and not liable to swell when they imbibe water." (Substances of the class here alluded to may readily be treated by the process under proper circumstances.)

"That it is also preferable in a treatment with alcohol, first, because organic substances are acted on by this menstruum better than by water, and also because by this process there is less waste of the alcohol."

"Finally, that a previous maceration is useless." No further publication relating to the subject appeared in the American Journal till the year 1838, when a very interesting and able paper was produced from the pen of the late Augustine Duhamel, of Philadelphia, in which he reviewed the subject as had been treated of by others, and minutely described the apparatus of Boullay & Son, with numerous experiments made by them, as well as other French pharmaciens; many of which were repeated by himself with the most satisfactory results.

Still pursuing the subject, he produced in the following year, in connection with our esteemed friend, Wm. Procter, Jr., another very able essay, in which they contributed the results of their joint experience, "in the application of the displacement system to some of the most essential preparations of medicines that are brought into daily requisition," and pressed its adoption into general use by a series of careful and well directed experiments in the preparation of extracts, tinctures, infusions and

than seventy-one are very abundant in our State. My plan in obtaining the necessary information to write this paper, was to address to such parties as I deemed most likely to be able to afford the knowledge, a circular letter containing the necessary queries. From these I received numerous replies, and to the disinterested efforts of my correspondents am I much indebted; and were not the list so long, I should be pleased to mention the names at length. To Dr. C. H. Bostwick, of Southern Michigan, however, am I especially indebted for a lengthy report upon the Flora of his section. Many districts I was unable to learn anything about; yet it is presumed the plants of such will correspond with those from which I had ample reports.

THE PROCESS OF PERCOLATION OR DISPLACEMENT:

Its History and Application in Pharmacy.

By I. J. Grahame, of Baltimore.

There has not been, perhaps, introduced into the pharmaceutic art, any process which has been attended with such great benefits, and productive of so many valuable improvements in the preparation of organic substances, as that which forms the caption of this paper. Would it be asserting too much to attribute the introduction into general use of that valuable class of medicines—the fluid extracts—to this interesting and beautiful, and at the same time simple process. Its very simplicity renders the circumstance more remarkable, that its adaptation to the wants of the pharmaceutist, notwithstanding the practical application of its principle had long previously been attested in some public as well as domestic manufactures, was not made manifest at a much earlier period than about the year 1833, when M. Boullay & Son fully developed its theory and directed the attention of pharmaceutists to the practical utility of the process in many departments of their profession.

These distinguished pharmaciens of Paris, by this single act, I conceive, have contributed much to the cause of pharmaceutical science.

Verbascum thapsus. Mullien.

Common in all open grounds.

Verbena hastata. Purple Vervain.
" *officinalis.*
" *spuria.* Blue Vervain.
" *urticifolia.* White Vervain.

Ind.; abundant, found along roadsides. Dr. Wilson states he has seen the last used as an external application in a case of poisoning by a species of Rhus, and with apparent success.

Veronica beccabunga. Brooklime.
" *Virginica.*
Viburnum dentatum. Arrow-wood, Mealy-tree.
" *lentago.* Sweet Viburnum, Nanny-bush.
" *opulus.* High Cranberry, Snowball.
" *oxycoccus.* Cramp-bark.

Ind.; abundant in L. P. in rich, moist lands. Bark diuretic.

Viola pedata. Blue, or Birds-foot Violet.
" *tricolor.* Pansey.

Ind., but rare.

Viscorus flavescens. Mistletoe.
Vitis vinifera. Grape.

A number of varieties of grape grow wild, and many choice ones are cultivated.

Xanthorrhiza apiifolia. Yellow-rose.
Xanthoxylum fraxineum. Prickly Ash.

The last very abundant in moist woods in L. P.; reported plentiful in St. Clair and Washtenaw counties.

The foregoing list, comprising nearly six hundred varieties of plants, embraces all, or nearly all, that I have been able to ascertain as indigenous or naturalized in our State. Their abundance is more particularly noted with their habitat. I find that over thirty members of the Materia Medica list of the United States Pharmacopœia can be profitably collected in our State, while of the ninety-one articles of the secondary list, no less

Ulmus Americana. White Elm.
" *fulva.* Slippery Elm or Red Elm.

Ind. The U. fulva is very abundant throughout the middle and south of L. P. Hundreds of tons of the valuable inner bark of this tree are collected and sent East every year from our State. The following is a statement of the manner of curing, etc., this bark, as related by a person who makes it a livelihood. The Indian name in Michigan is Sharscope; time to commence collecting is 15th of May, continuing about six weeks. Best way to dry the bark is to nail up the large pieces in a room heated by a stove, or else in the direct sun light. Must be kept from rains and dew. Requires about three days to thoroughly dry in favorable circumstances. The larger trees afford the most brittle and thick white bark, which if white brings the highest price, but which is not best for medicinal use, as the tough, stringy, thin bark affords the best and most mucilage. About half the weight of the green bark is wasted in drying. The Indians are usually paid one cent per pound for collecting the green bark, and the price of the bark when brought into market varies from five to ten dollars per cwt. In grinding the tough bark it yields two-thirds of its weight of superfine flour, and the balance is coarse ligneous powder suitable for cataplasms. I believe that considerable slippery elm bark is exported.

Urtica dioica. Nettle
" *pumila.* Stringless Nettle.
" *urens.* Dwarf Nettle.

Ind.; abundant in S. W. of L. P.

Uvaria triloba. Paw Paw, Custard Apple.

Ind.; abundant in N. of L. P. and in U. P.

Uvularia perfoliata. Bellwort.
Vaccinium frondosum. Blue Whortleberry.
" *resinosum.* Huckleberry.

Ind.; abundant in N. of L. P.

Variolaria dealbata.
Veratrum viride. American Hellebore.

I cannot learn that the last is abundant in Michigan.

sold in our eastern markets at low prices, is made from the expressed juice of the cultivated garden chickory, which is so much used for adulterating ground coffee.

Teucrium chamædrys. Creeping or Wall Germander.
" *scordium.* Water Germander.

Ind.; not common. Tonic, aromatic, diuretic.

Thuja occidentalis. Arbor-vitæ or False White Cedar.

Ind., abundant in N. of L. P., among the pines in wet places.

Thymus citri-odorus. Lemon Thyme.
" *vulgaris.* Thyme.

Nat., growing wild and plentifully.

Tilea Americana, (Linn.) Baswood.

Besides the value of the wood, the inner bark of this tree is equal to slippery elm for cataplasms.

Trillium pratense. Red Clover.

Cultivated extensively as a forage for live stock.

Trillium grandiflorum. Ground Lilly.
" *rivale.* Indian Balm.
" *pendulum.* Beth Root.
" *sessile.* Birth Root.

These plants of the order Trilliaceæ are common throughout the L. P. in rich soils of damp woods, are much used by botanic physicians in promoting parturition. They possess more or less astringency.

Triosteum angustifolium. Horse Gentian.
" *perfoliatum.* Fever Root.

Ind.; abundant; found in stony woods. Diuretic, in large doses emetic; in small, cathartic.

Tussilago farfara. Colt's-foot.

Very abundant in Clinton, Lenawee and Monroe counties.

Typha latifolia. Cat-tail Flag.

Ind.; abundant. Root is astringent and diuretic.

Both cultivated, the first with considerable success. I have seen very fair syrups made of its juice.

Spiræa alba. White Leaf.

" *Americana.* Meadow Sweet.

" *rosacea.* Spirea.

" *tomentosa.* Hardhack.

Of these the S. tomentosa is reported abundant in Clinton county in low grounds; the plants of this genus are much esteemed for their astringency.

Staphylea trifolia. Bladder Nut.

Ind.; abundant in L., a new tonic of the "Eclectics."

Stellaria media. Chickweed.

Symphytum officinale. Comfrey.

Comfrey is abundant in low, rich, new lands; is valuable for its demulcent properties.

Symphonia carpus. Snowberry.

Symplocarpus fœtidus. Skunk Cabbage.

The bark of the snowberry, which is extensively cultivated in gardens, possesses tonic and anti-periodic properties; the skunk cabbage is exceedingly abundant in the three lower tiers of counties.

Syringa vulgaris. Lilac.

" *alba.* White Lilac.

Nat.; abundant; bark stimulant, tonic, diuretic.

Tanacetum vulgare. Tansey.

Nat., abundant in S. of L. P.; plentiful in Monroe county.

Taraxacum dens-leonis. Dandelion.

Ind. This valuable plant is very abundant throughout our State; reported especially so in St. Clair, Wayne, and the lower tiers of counties of L. P. Mr. Coffinbury states that the root is best when collected after each individual flower has fallen off. I have had it stated to me by reliable authority that a large proportion of the Ext. Dandelion imported from England, and

Selenium Canadense. Marsh Parsley.

" *palustre.* Marsh Smellage.

Ind.; abundant.

Senecio aureus. Life Root.

Ind.; very abundant in S. half of L. P.

Senecio balsamitæ. Balsam Groundsel.

" *gracilis.* Unkum, or Female Regulator.

" *obovatus.* Female Regulator.

Ind.; abundant in S. W. of L. P.; all the plants of this genus are exceedingly abundant, and are considered valuable by the "Eclectics," having special tendency to the uterus.

Silene Virginica. Ground Pink, Catch Fly.

Ind. Root emmenagogue, cathartic.

Silphium perfoliatum. Indian Cup Plant.

Sinapis alba. White Mustard.

" *nigra.* Black Mustard.

These mustard plants are nat., and grow wild to some extent.

Sisymbrium officinale. Hedge Mustard.

Ind.; abundant.

Smilax rotundifolia. Green Briar.

Ind.; abundant; infusion of plant useful in mercurial salivation, in chronic rheumatism, and in diseases of the skin.

Solanum dulcamara. Bittersweet.

" *lycopersicum.* Tomato.

" *Virginianum.* Garden Nightshade.

The Bittersweet is abundant everywhere in L. P., the terminal twigs should be collected in October after the fall of the leaves, and cut into short pieces, which favors their drying; the S. Virginianum is reported abundant in Monroe county.

Solidago odora. Golden Rod.

Ind.; abundant in waste places in L. P.

Sonchus oleraceus. Sow Thistle.

Sorghum saccharatum. Chinese Sugar Cane.

" *vulgaris.* Broom Corn.

Nat., the common sage only used; the fresh leaves of the S. lyrata are employed for warts; it is also a cancer cure.

Sambucus Canadensis. Black Elder, or Common Alder, or Elder.

Ind.; abundant in S. of L. P., in swamps and low waste places; flowers laxative, used in diseases of infants; the berries are used in making wine.

Sanguinaria Canadensis. Bloodroot.

This invaluable plant is abundant in our State. It has been reported especially abundant in Ionia, Wayne, Saginaw, Lenawee, Genesee, and Monroe counties.

Sanicula Marilandica. Sanicle.

Saponaria officinalis. Soapwort, Bouncing Bet.

Ind.; abundant; the last in dry waste lands of L. P.

Saracenia purpurea. Purple Saracenia.

" *variolaris.* Huntsman's Cup.

" *flava.* Fly Trap.

Ind.; abundant in shallow ponds; great powers ascribed to them as remedies for dyspepsia.

Satureja hortensis. Summer Savory.

" *montana.* Winter Savory.

These plants are nat., and grow wild in abundance.

Scrophularia lanceolata. Heal-all, Square-stalk.

" *Marilandica.* Carpenter's Square.

Ind,, abundant; both used as substitutes for the European varieties of the genus Scrophulariaceæ.

Scutellaria lateriflora. Scull-cap.

Ind.; very abundant in S. half of L. P., especially luxuriant in Tuscola county, on the borders of the water courses.

Secale cereale. Common Rye.

" *cornutum.* Ergot.

Rye is cultivated largely, how much, or how profitably the diseased grain could be collected, I am not aware.

Rumex acetosa. Garden Sorrel.
" *acetosella.* English or Sheep-sorrel.
" *vesicarius.* Common Sorrel.
" *aquaticus.* Great Water Dock.
" *Britannica.* Water Dock.
" *crispus.* Yellow Dock.
" *obtusifolius.*
" *sanguineus.* Sour Dock.
" *acutus.* Narrow Dock.
" *alpinus.* English Dock, Monk's Rhubarb.
" *patientia.* Curled Dock.

This genus is extensively represented in this State, the proper or yellow-rooted docks are exceedingly abundant in and near our still streams, and moist rich grounds, though but two are recognized officinally; they are used by empirics indiscriminately. The leaves of the sour docks make good salads. The R. crispus is preferred in the West to those which are recognized in the U. S. Pharmacopœia.

Ruscus aculeatus. Butcher's Broom, Wild Myrtle.

Ruta graveolens. Rue.

Nat., the first is scarce, the last abundant.

Salix alba. White Willow.
" *Babylonica.* Weeping Willow.
" *caprea.* Brook Willow.
" *nigra.* Black or Pussy Willow.
" *pentandra.* Bastard Willow.
" *purpurea.* Blue Willow.
" *flava.* Yellow Willow.
" *Russeliana.* Hazel Willow.

Most of the above varieties of Salix are abundant in all parts of the State; the bark of all yield the active principle *salicin.*

Salvia horminium. German Sage.
" *lyrata.* Wild or Meadow Sage.
" *officinalis.* Common Sage.
" *sclara.* Clany, Clammy Sage.

Ribes floridum. Wild Black Currant.
" *nigrum.* Black Currant.
" *cynosbati.* Gooseberry.

The first variety is ind., and abundant in S. of L. P.; the black currant is cultivated largely in Wayne county.

Ricinus communis. Castor Oil Plant.

Nat., but scarce.

Robinia advense. Yellow Locust.
" *pseud-acacia.* Black Locust.

Ind.; abundant; bark of the root emetic, cathartic.

Rosa canina. Dog Rose, Wild Briar.
" *centifolia.* Hundred-leaved Rose.
" *Gallica.* French, or Damask Rose.

The above nat. varieties of genus Rosaceæ are cultivated abundantly in our gardens; besides these, there are from ten to fifteen varieties of wild roses found in the State.

Rosmarinus Americanus. American Rosemary.

Not plentiful; found in S. W. of L. P.

Rubus odoratus. Rose-flowering Raspberry.
" *niger.* Black Raspberry.
" *rosafolius.* Bridal Rose.
" *strigosus.* Red Raspberry.
" *trivialis.* Dewberry.
" *villosus.* Blackberry.

This extensive family are well represented in our State; the red raspberry being exceedingly abundant near St. Mary's river. A Mr. Church, living upon Sugar Island, in that river, made in the year 1857, over 80,000 pounds of jam and jelly from the fruit he collected in his vicinity; the plants are plentiful in every portion of the State, of which the fruit, leaves, bark, and roots possess medicinal value.

Rudbeckia purpurea. Red Sunflower.

Ind.; abundant.

Michigan than in any other State. They abound in the hard clay soils of barren uplands, in Eaton and Macomb Counties; the root is gathered in October. I should say that from 300 to 500 pounds are now annually gathered; it is considered a certain and powerful diaphoretic.

Pulmonaria officinalis. Lungwort.

Ind.; abundant in south counties of L. P.

Pycnanthemum aristatum. Wild Basil.
" *incanum.* Narrow-leaved Thyme.
" *pilosum.* Pycnanthemum.
" *Virginicum.* Prairie Hyssop.

Ind., but not common, except the P. pilosum.

Pyrethrum parthenium. Fever Few.
Pyrola rotundifolia. Canker Lettuce.

The last is abundant in moist woods of S. W. of L. P.; the whole plant is diuretic.

Pyrus coronaria. Wild Crab.
" *malus.* Apple Tree.

The inner bark of the root of the Wild Crab is said to be a powerful tonic and febrifuge.

Quercus alba. White Oak.
" *rubra.* Red Oak.
" *tinctoria.* Black Oak, Quercitron.

Abundant in sections, more so in the south; inner bark of them all contain a large percentage of tannin.

Ranunculus acris. Buttercup.
" *bulbosus.* Crowfoot.
" *repens.* King Cup.

Common everywhere in fields; expressed juice of Cormus used as vesicating agents.

Rhus glabra. Sumac.
" *pumila.* Poison Ash.
" *radicans.* Poison Joy.
" *toxicodendron.* Poison Oak.
" *venenata.* Poison Sumac.

All the above common throughout the State.

Populus candicans. Balm of Gilead.
" *grandidentata.* Large or Quaking Aspen.
" *tremuloides.* Amer. or White Poplar.

The genus Populus is abundant throughout our State. The juice and buds of the first being collected, while the inner bark only of the latter is used for their tonic and febrifuge powers; that of the large Aspen being considered the best.

Portulacca oleracea. Parslane.
Potentilla pumila. Sarmentose, Five Finger.
" *simplex.* Cinque Foil.

The last two are indigenous, and are excellent substitutes for the European varieties of this genus.

Prinos verticillatus. Black Alder.

Ind.; very abundant throughout lower half of L. P. Dr. Wilson states that this is successfully used as an antidote for poisoning of the hands by Rhus toxicodendron.

Prunus domesticus. Common Plum.
" *lauro-cerasus.* Cherry Laurel.

The common or cherry laurel is found but rarely; the domestic plum is cultivated here as everywhere, in orchards.

Prunella vulgaris. Heal-all, Self-heal.

Ind.; abundant; leaves reported to possess power, when bruised and applied to wounds, to heal them.

Ptelea trifoliata. Wafer Ash, Wing Seed.

Ind. and abundant.

Pteris aquilina. Common Brake.

Ind.; common everywhere in waste places.

Pteris punctata. Evergreen Brake.
" *venosa.* Winter Fern.

These plants are astringent and anthelmintic, and are abundant all over the State.

Pterospora andromeda. Coral, or Crawley.
" *flaviculis.* Yellow Stalked Crawley.
" *leucorrhiza.* White Stalked Crawley.

These rare and singular plants, are found more plentifully in

Podophyllum montanum. Raccoon Berry.
" *peltatum.* Mandrake.

Ind.; very abundant throughout L. P., in the swales of soft rich soils, reported especially common in St. Clair, Ionia, Wayne, Genesee and Macomb Counties. The root of the Mandrake, on account of its valuable carthartic powers, and special tendency to the liver, is called throughout the west, Mercury Root.

Polemonium Americanum. Jacob's Ladder.
" *reptans.* Greek Valerian.

Ind.; reported common in S. of L. P.

Polygala amara. Bitter Polygala.
" *chamæbuxus.* Prairie Senega.
" *paucifolia.* Fringed Polygala.
" *polygama.* Ground Flower.
" *rubella.* Bitter Polygala.
" *sanguinea.* Caducous Polygala.
" *senega.* Seneka.

This extensive genus is abundantly represented in our State, but the most valued of them, the P. senega, is very rare. Most of the others, however, possess similar properties, and especially is this true of the P. sanguinea. The roots are aromatic, smell like Gaultheria, an infusion of P. paucifolia, is recommended in erysipelas. They are all termed snake-roots, and supposed to possess antidotal powers for the bites of poisonous snakes.

Polygonum arifolium. Knot Grass.
" *fagopyrum.* Buckwheat,
" *persicaria.* Knot Weed.
" *punctatum.* Smart Weed.

All of the above are abundant, buckwheat being cultivated largely; its use is recommended to recall the secretion of milk; a tea of the plant is used in erysipelas. The P. persicaria, under the name of Smart Weed, is used for its vesicating powers.

Polypodium vulgare. Rock Polypod.
Polytrichium juniperinum. Hair-cap Moss.

Not very common, but yet sufficiently so for ordinary uses, in S. W. of L. P.

Papaver rubra. Red Poppy.
" *rhœas.* Corn Poppy.
" *somniferum.* White Poppy.

All nat., and found in gardens; leaves and flowers used in domestic practice.

Parthenium integrifolium. Cutting Almond.

The root of this ind. and abundant plant is used as a diuretic and emollient.

Phalaris canariensis. Canary Seed plant.
Panicum milliaceum. Common Millet.

Nat.; cultivated a little.

Physalis viscosa. Yellow Henbane, Ground Cherry.

Ind.; abundant in S. W. of L. P.; berries diuretic and sedative.

Phytolacca decandra. Garget, Spoke, Poke.

Ind.; very abundant throughout the State, especially in the South; root, fruit and leaves, are used; emetic, cathartic, narcotic. Used much in the cure of rheumatism, and also for the swelled udder of cows.

Pimpinella anisum. Anise.

Cultivated somewhat.

Pinus Lebanus. Cedar of Lebanon.
" *palustris.* Yellow Pine.
" *strobus.* Common White Pine.
" *nigra.* Black Pine, Pitch Pine.

The genus Pinus, from the tribe Abietineæ, is well represented in our State, as noticed in my preface to this list; the lumber trade, arising from our immense forests of these trees, forms now one of the most valuable resources of the State.

Plantago cordata. Water Plantain.
" *major.* Plantain.
" *lancifolia.* Rib Grass.

Ind.; abundant in N. of L. P. The root of the common Plantain is astringent; leaves form a good salad when young.

Nicotiana tabacum. Tobacco.

Cultivated a little for home use.

Nigella sativa. Nutmeg Flower.

Nuphar advena. Yellow Pond Lily.

Nymphæa odorata. White Pond Lily.

The pond lilies are abundant in all our still waters; the roots form the best poultices that can be used in suppurating abscesses.

Ocimum basilicum. Sweet Basil.

" *caryophyllatum.* Bush Basil.

Nat., but not plentiful.

Œnanthe phellandrium. Water Fennel.

Nat., but not common.

Œnothera biennis. Tree Primrose.

Onosmodium strigosum. False Gromwell or Wild Job's Tears.

Origanum majorana. Sweet Marjoram.

" *vulgare.* Wild Marjoram.

The above plants are quite common in S. W. of L. P.

Orobanche Americana. American Broom-rape.

" *uniflora.* One-flowered Broom-rape.

" *Virginiana.* Beech Drops, Cancer Root.

The plants of this genus are plentiful wherever the Beech tree grows; are much esteemed in "Eclectic" practice as astringents.

Osmorrhiza longistylus. Sweet Cicely.

Osmunda regalis. Buck-horn Brake.

" *spectabilis.* Royal Flowering Fern.

Ostrya Virginica. Iron Wood.

Oxalis stricta. Sorrel.

Of the above, the genus Osmunda is plentiful in L. P.; used as tonics.

Pæonia officinalis. Peony.

Panax quinquefolium. Ginseng.

The last is ind., and very abundant throughout the State, in thick dry woods.

Mitchella repens. Squaw Vine.

Ind., very plentiful among the hemlocks; in some spots forms a perfect carpet of green over large districts.

Monarda didyma. Oswego Tea.
" *punctata.* Horsemint.
" *squarrosa.* Mother of Mints.

Ind., abundant in L. P., in light, sandy soils; used alike for their carminative and diuretic properties.

Monotropa uniflora. Fit Plant, Indian Pipe.

Ind., rare; root anodyne; Dr. Steward's substitute for opium.

Morus alba. White Mulberry.
" *rubra.* Red Mulberry.

The red mulberry is ind.; both are found in S. W. of L. P.; fruit laxative and agreeable; bark cathartic.

Myrica cerifera. Bayberry.

Ind., but not plentiful.

Nabalus albus. Lion's Foot.
" *serpentaria.* Rattlesnake-root.

These plants, of the order Asteraceæ, are found plentifully in the rich soils of the L. P.; the leaves have an Indian reputation as antidotes for snake bites; the roots are astringent.

Narcissus tagetta. Narcissus.

Naturalized, not common; root emetic, acrid.

Nasturtium officinalis. Water Cress.
" *amphibius.* Water Radish.

Both ind., abundant in S. of L. P.

Nepeta cataria. Catnip.
" *glechoma.* Ground Ivy.

Ind.; the first common everywhere in fields; the second found along fences, etc.

are mucilaginous, and equivalent in properties to gum arabic, slippery elm, etc.

Marchantia polymorpha. Brook Liverwort.
Marrubium vulgare. Horehound.
Maruta cotula. Mayweed.
Matricaria chamomilla. German Chamomile.

Of the above, the two first are common every where; the last has been cultivated, by way of experiment, by German physicians in some few places.

Melia azederach. Azederach, U. S. P.

Ind., rare; recently recommended as an antiperiodic; used at the South as a vermifuge.

Melilotus alba. King's Clover.
" *officinalis.* Lemon Balm.
Melissa officinalis. Balm.

All are plentiful throughout L. P.

Menispermum Canadense. Yellow Parilla.

Ind., very abundant in Ionia county, and probably throughout the S. of L. P.; called sometimes Moon-seed; used for strangury in horses.

Mentha piperita. Peppermint.
" *viridis.* Spearmint.

Naturalized; the peppermint plant is extensively cultivated, for the purpose of distilling its essential oil. The writer has prepared a separate paper upon this plant, for presentation to the Amer. Phar. Assoc., at this meeting. The spearmint has also been cultivated for its essential oil, but low prices and limited demand have caused it to be neglected.

Menyanthes trifoliata. Buck Bean.
" *Americanus.* Marsh Trefoil.

The above members of the genus Menyanthes, and order Gentianaceæ, are ind., abundant in S. W. of L. P.; roots form excellent substitutes for the Gentiana lutea, and other varieties of the genus Gentiana.

certain class of practitioners, is very abundant throughout the State, growing by roadsides, in fields, on prairies, etc.; reported plentiful in Monroe and Lenawa Counties.

Lonicera sempervirens. Scarlet or Trumpet, Honey-suckle.
" *vulgaris.* Suckling, Common Woodbine.

The plants of this genus are beautiful and highly ornamental; the ripe berries of the first are powerfully catharatic; the leaves and flowers are bitter, mucilaginous and detersive. A syrup prepared from this is useful for sore throat and irritability of the lungs.

Lupinus albus. White Lupine, Finger Leaf.

Ind., abundant in L. P.; seeds and root bitter and astringent.

Lychnis rubra. London Pride.
Lycoperdon proteus.

Both moderately abundant in S. W. of L. P., but of slight value.

Lycopus Americanus. Paul's Betony.
" *Virginicus.* Sweet Bugle, Bugle Weed.

The genus Lycopus, peculiar to the northern part of the U. S., is found plentifully throughout our State, in wet meadows, near marshes, etc.; these plants are employed in pulmonary affections for their anodyne and tonic powers. Prof. Williams highly recommends the Lycopus Virg. as an astringent in uterine and other hæmorrhages. A long account of its powers was published in the N. Y. Jour. of Med. some years ago.

Lythrum salicaria. Loose Strife.
" *verticillatum.* Swamp Willow.

The plants of this genus are common in the L. P.; are somewhat used for their mucilaginous and astringent properties.

Magnolia tripetala. Umbrella Tree, Cucumber Tree.

Ind., but rare; bark tonic, aromatic. Scalded leaves are used as a dressing for blisters.

Malva rotundifolia. Low Mallow.
" *sylvestris.* High Mallow.

Both reported abundant in Monroe county; all of this genus

tubers are employed in Botanic practice, and are possessed of acrid, odorous properties, and are recommended as diuretics; they, however, are much employed for other purposes, and their therapeutic value is worthy of full investigation.

Ligustrum vulgare. Prim, Privet.

This plant belonging to the order Oleaceæ, De Candolle, is ind., and abundant in S. W. of L. P.; it is often cultivated in flower gardens. In medicine the leaves and bark are used for their astringency.

Lilium candidum. Meadow Lily.

The bulb of this naturalized plant is employed to form maturating cataplasms; the flowers, in Europe, are much used in perfumery; it is abundant in L. P.

Linum usitatissimum. Flax.
" *catharticum.* Purging Flax.

The first is cultivated to considerable extent; the indigenous variety is quite common in S. W. of L. P.

Liquidamber styraciflua. Sweet Gum.

The above is the only member of the genus to which it belongs that is abundant in our State; its medicinal powers are more fully developed further south, it being a native of warm climates. Prof. Wright, of the Kentucky School of Medicine, in a communication to the Am. Jour. of Med. Science, July, 1856, highly recommends a syrup prepared (after the officinal method for syrup of Wild Cherry, U. S. P.) from the bark, as a valuable remedy for diarrhœa and dysentery.

Liriodendron tulipifera. Tulip Tree, Poplar.

This magnificent tree is abundant in the middle and south of L. P.; the inner bark is a tonic febrifuge of much power. Dr. Dorsch states that in his experience, though it does not exactly substitute quinia, yet it will prevent a relapse, after the fever has been broken by Peruvian bark or its alkaloids.

Lobelia cardinalis. Red Cardinal or Lobelia.
" *inflata.* Lobelia, Indian Tobacco.
" *syphilitica.* Blue Cardinal or Lobelia.

This genus, one member of which has been so much used by a

Larix Americana. Tamarac, Amer. Larch.
" *polyporus.* Larch.

The Tamarac, sometimes called Hackmetac, is abundant in the swamps of our State; its resin is collected to some extent by cutting cup-like incisions into the trunks of the tree near the root, early in spring. It is reported common in Clinton and Lenawae Counties.

Laurus sassafras. Sassafras.

Ind.; very abundant throughout L. P.; reported very abundant in St. Joseph's Co. It is recommended not to collect the pith of this plant before the 15th of October.

Lavandula vera.

Nat.; not common.

Ledum latifolium. Labrador or Marsh Tea.

Ind.; abundant in wet grounds in L. P.; leaves are bitter and employed in cataplasms for certain cutaneous eruptions. The L. palustre, under the same common name, is abundant and employed for similar purposes.

Lemna minor. Duck Meat.

This beautiful little water plant is common in all our still waters. It is recommended by high authority as useful in form of cataplasm for piles and gout, and internally in decoction for jaundice.

Leonora cardiaca. Motherwort.

Ind.; abundant throughout the State.

Lepidium Virginianum. Pepper Grass.

Ind.; quite common in S. of L. P.

Leptandra Virginica. Leptandra, Black Root, Culver's Root.

Ind.; abundant, especially in Eaton county.

Liatris graminifolia. Rattle Snake's Master.
" *odoratissima.* Button Snake Root.
" *scariosa.* Blazing Star, Gay Feather.
" *spicata.* Devil's Bit.

The above members of the genus Liatris are ind., and very abundant in L. P., wherever there exists a dry sandy soil. The

Iris Versicolor. Blue Flag.

Ind., very abundant in L. P., near all quiet streams or marshes.

Jeffersonia diphylla. Twin Leaf.

Ind.; abundant in S. W. of L. P.

Juglans cinerea. White Walnut, Butternut.
" *nigra.* Black Walnut.
" *squarrosa.* Shagbark Hickory.
" *regia.* European Walnut.

The above members of this family are quite abundant in our State. The J. cinerea is found among the pineries in isolated spots, a few trees together; it is reputed plentiful in Monroe county, by Dr. Dorsch, who states that the inner bark gives an extract quite as valuable as that from the bark of the Juglans regia, which is recommended by the European Pharmacopœias in scrofula. The inner bark of the black walnut acts as a mild cathartic; the last is nat., but how abundant, I have not ascertained.

Juniperus communis. Juniper.

Nat., found plentifully in Macomb county.

Juniperus sabina. Savin.
" *Virginiana.* Red Cedar.
" *depressus.*

The J. sab. is ind., and abundant in S. P.; the second is found abundant in lower three tiers of counties of L. P.

Kalmia angustifolia. Narrow-leaved Laurel.
" *glauca.* Swamp Laurel.
" *latifolia.* Broad-leaved, or Sheep-leaved.

All Ind., and abundant in L. P.

Lactuca altissima. Head Lettuce.
" *elongata.*
" *sanguinea.* Wood Lettuce
" *sativa.* Garden Lettuce.
" *scariola.* Purple Lettuce.

All nat. except the L. elongata, which is our only indigenous variety.

Hyoscyamus niger. Henbane

This plant is ind., and abundant in and around Detroit, in Macomb county, and several other portions of our State. The writer of this paper made a report upon this plant at the last meeting of the American Pharmaceutical Association, in which he was unable, from want of time, to have the quality of the extracts he made from the indigenous plant tested, in comparison with those made from the foreign plant in England by the best houses then engaged in their manufacture, and also of those made by the writer himself from the foreign dried leaves; he now, however, can say, that a fair and impartial trial, in the hands of numerous physicians of the city of Detroit, and of St. Mary's Hospital, has resulted in the opinion being expressed by those employing the several extracts, comparatively, that those made by the writer from the indigenous plant were *more satisfactory as therapeutical agents, on account of their activity*, than the foreign extracts with which they were compared. This result will be found to be confirmed by the Report upon the Progress of Pharmacy made by the St. Louis Pharmaceutical Association at this present meeting.

Hypericum perforatum. St. Johnswort.

Ind.; quite common in S. W. of L. P.; the H. pyramidatum and H. Canadense both common in Illinois; called Johnswort or St. John's-wort; they are balsamic, pectoral, somewhat styptic and vulnerary; employed in diarrhœa, dysentery, mania, and low spirits; a syrup of it is useful in croup.

Hyssopus officinalis. Hyssop.

Nat., common in S. of L. P.

Iberis amara. Bitter Candy Tuft.

Seeds used. Nat., but not common.

Impatiens pallida. Jewel Weed.

Ind., abundant; the whole plant is acrid, and sometimes is employed as an emetic, cathartic, and diuretic.

Inula helenium. Elecampane.

Nat., abundant in S. of L. P., growing in wet grounds.

Humulus lupulus. Hop.

Ind.; cultivated largely. Dr. Wilson of Port Huron states, "that lupulin is described in the books as narcotic sedative; I have used it a great deal, but never saw anything approaching to narcotism produced by it. I have found it to be an efficient antiphrodisiac in spermatorrhœa. Dr. W. C. Smith, of Troy, in this State, says he used it with considerable benefit in a case of hysteria, but a tolerance was soon established, and after a few days it had no more effect; I have observed this, but generally found that if, after a suspension of a few days, it be again used, it is as efficient as ever. From comparing my experience with that of Dr. Smith, I would be inclined to regard it as having a specific action upon the lower part of the spinal cord, depressing its reflex power."

Hydrangea arborescens. Hydrangea.

Ind.; but rare.

Hydrastis Canadensis. Golden Seal, Yellow Root, Scrofula weed, etc.

Ind.; found plentifully in some portions of our State, reported abundant in Clinton, Ionia, St. Josephs, Oakland and St. Clair counties; it is found in the swales of rolling land, and also in good soils of dry places. Dr. Bostick of Mishawaukie, (to whom I am greatly indebted for much information concerning the plants of our State,) is of opinion that position greatly varies the medicinal activity of plants, and instances this which he considers most valuable when gathered from the highest and driest places in which it can be found; he thinks that low, wet situations, often seem to develop in many plants acrid and unwholesome properties which are latent, or at least not possessed by the same in other situations. Mr. Coffinburg suggests, that the proper time for collecting the H. Canadensis is from the 1st to the 15th of August, at which time its activity is most fully developed. Though this root is pronounced by Dr. Williams to be bitter, pungent, nauseous and disagreeable, yet its introduction into medicine by the Botanics, and the merits claimed for it by them, have caused its general introduction as an important member of our indigenous Materia Medica.

seeds is a good substitute for olive oil. The tubers of the second are eaten; diuretic; contains starch and some sugar.

Helleborus fœtidus. Bear's-foot.
" *niger.* Hellebore.

Nat. The first is one of the most acrid of the Ranunculacea. Not plentiful in our State.

Helonias bullata. Drooping Starwort.
" *dioica.* Helonias, False Unicorn.

The last of these is very abundant in south part of the State. It is much used by Botanic physicians, and is often confounded with the Aletris farinosa.

Hepatica triloba. Alum root.
" *Americana.* Kidney Liver-leaf.

Both these plants are ind., and abound in S. W. of L. P. Plants possess alterative powers.

Heracleum lanatum. Masterwort, Cow-parsnip.

Ind., very abundant in dry meadows throughout S. half of L. P. Leaves, seeds and root are used, possessing warm stimulating and carminative powers. The root is sometimes termed in the west, Martin root.

Heuchera Americana. Alum Root.
" *caulescens.* American Sanicle.
" *pubescens.* Stop Quick.

All the plants of this family are powerfully astringent. They are ind. and abundant in L. P.

Hibiscus palustris. Marsh Hibiscus.

Ind.; abundant; root only employed in medicine.

Hieracium venosum. Hawkweed.

Ind.; not common. Plants of this family are used for their astringent, sudorific and pectoral powers.

Hordeum, vulgare. Barley.
" *jubatim.* A species of Barley.

The first is largely cultivated in the State, the last is used for same purposes as H. vulgare.

Ind. The first abounds in L. P. north, on pine ridges, dry places. The last is not common; it is used by the Indians as a specific for rattle-snake bite, for tooth-ache, etc.

Geum rivale. Avens Purple or Water Avens.
" *Virginianum.* White Avens, Throat-root.

Ind.; abundant in whole of L. P., near streams, in wet meadows, etc. Root astringent, tonic; used with gold thread in apthous, sore mouth, sore throat, in chronic leucorrhœa, diarrhœa, etc.

Gillenia stipulacea. Indian physic.

Ind.; abundant in S. W. of L. P.

Glycyrrhiza glabra. Liquorice.

Some attempts at cultivation of this plant have been made in S. W. of L. P., but with indifferent success as yet.

Gnaphalium uliginosum. Mouse-ear.
Hamamelis Virginica. Witch-hazel.

Ind.; abundant in S. of L. P.

Hedeoma pulegioides. Pennyroyal.

This plant has been successfully cultivated in St. Joseph's county for its essential oil, but the low prices of late years have caused its abandonment.

Hedera helix. Ivy.
Helenium autumnale. Sneezewort, Yellow Star.

Both ind. and abundant, but of slight importance in medicine. The herb of the last has been used in intermittents.

Helianthemum corymbosum. Rock-rose, Frost-weed.
" *Canadense.* Frostwort.

Ind.; abundant in L. P. in dry, sterile lands, and in sandy soils; both employed in scrofula.

Helianthus annuus. Sun-flower.
" *tuberosus.* Jerusalem Artichoke.
" *vulgaris.* Polar-plant.

The first is nat., and found in all gardens. Oil of the ripe

most profitably carried on in this State by means of the portable still, mentioned under the head of Abies, for distilling oil of hemlock. Large quantities of the berries are annually offered for sale in Detroit, and are simply eaten as a relish. The unusual abundance of this plant has occasioned a great variety of names being applied to it; one gentleman jokingly stated, that he seriously thought of publishing a small quarto volume of them. The following are a few of them, as employed by the people in the Wintergreen districts: Partridge Berry, Deer Berry, Aromatic Wintergreen, Three-leaved Wintergreen, Teaberry, Checkerberry, Boxberry, Wintergreen, Common Wintergreen, Pigeon Berry, Mountain Tea, etc.

The berries and leaves are both used for their pleasant aromatic, stimulating powers, but the essential oil is the product most used, and by which only is it known in medicine.

Genista tinctoria. Green Broom.

This plant is nat. but rare; used as an astringent.

Gentiana catesbœi. Blue Gentian.
" *crinita.* Blue-fringed Gentian.
" *ochroleuca.* Sampson Snake-root.
" *pneumonanthe.* Marsh Gentian.
" *quinqueflora.* Gall of the Earth.
" *saponaria.* Soapwort Gentian.

The above varieties of this family are abundant throughout the State. Most of them are as much esteemed in practice as the G. lutea. Dr. Dorsch says he knows the roots of the G. crinita and G. saponaria to contain the same bitter principle as that of the G. lutea, and may be used accordingly.

Geranium maculatum. Crane's-bill.
" *Robertianum.* Herb Robert.

Ind.; very abundant in all of L. P., in low grounds; reported to be especially plentiful in Eaton, Wayne and Monroe counties. The G. maculatum is ranked among our best and purest astringents. The G. Robertianum is employed in the bloody water and bloody flux of animals.

Gerardia pedicularia. Bushy Gerardia, American Fox-glove.
" *quercifolia.* Golden Oak.

Frasera Carolinensis. American Columbo.

Ind.; very abundant in Jackson county, and plentiful throughout south half of L. P.

Fraxinus acuminata. White Ash.
" *pubescens.* Red Ash.
" *polygamia.* Common Ash.
" *sambucifolia.* Black Ash.

The above members of this family are very abundant in some parts of the L. P., more particularly in Clinton, Ionia, Washtenaw, and adjoining counties; the inner bark of the root and younger branches is employed to some extent, it possessing decided tonic and astringent power, the leaves of the common ash are used in rheumatism and gout.

Fumaria officinalis. Fumatory.
Fœniculum " Sweet Fennel.

The above are both nat.; the first is not plentiful in our State, the last is quite common in the S. W. part of L. P.

Galium aparine. Cleavers, Goose Grass.
" *asprellum.* Pointed Cleavers.
" *trifidum.* Small Cleavers.
" *verum.* Yellow Bed-Straw.

Ind.; abundant in Shiawasse county, and it is presumed throughout the middle of the State; the whole plant is used, and employed in the dried state by "Eclectics," who give it in infusion, for its refrigerant and diuretic effects.

Galega officinalis. Virginia Goat's-rue.

Ind.; not common, however.

Gaultheria procumbens. Wintergreen.

This beautiful little plant is ind., and exceedingly abundant throughout the upper portion of L. P., and the whole of the U. P.; so much so, that in many townships it covers the ground almost to the exclusion of the ordinary grasses and common wild plants; its delicately colored and flavored berry, in spring, forms the favorite food for a great variety of feathered creatures, and it is apparent that the distillation of the essential oil could be

of Shiawasse Co., the root, leaves, and flowers being used, all highly diuretic.

Euonymus Americanus. Burning Bush.

" *atropurpureus.* Wahoo, Spindletree.

Ind.; very abundant in several counties in the S. of L. P., particularly in Ionia and Washtenaw counties; fruit emetic, diuretic; bark of root tonic, laxative, alterative.

Euphorbia corollata. Large Flowering Spurge.

" *hypericifolia.* Large Spotted Spurge.

" *ipecacuanha.* American Ipecac.

" *maculata.* Bowman's Weed.

" *vulgare.* Go-quick.

Nat. ord. Euphorbiaceæ; E. cor. is very abundant in the dry sandy soil of Monroe county, in fact throughout the southern tier of counties. Dr. Dorsch states, that this root causes strong, drastic purgation, producing fluid stools like croton oil. The E. hyp. is less acrid, and is found abundantly in richer soils farther north; it has been highly recommended in dysentery, is considered tonic and astringent. The E. ipecac. has been employed in place of ipecacuanha, and principally as a hydragogue cathartic. E. maculata possesses similar properties to the first two. All are abundant, and can be profitably collected.

Euphrasia officinalis. Eye Bright.

Ind.; abundant throughout the State, with its beautiful flowers and elegant appearance, is one of our most beautiful plants. Dr. Kyle has lately recommended this plant as a remedyfor epilepsy.

Fagus ferruginea. Beech.

Ind.; abundant. Nut forms an edible food, inner bark tonic astringent; leaves in ointment and cataplasm employed for burns and scalds.

Fragaria vesca. Common Strawberry.

Ind.; abundant. Stems and leaves tonic, astringent, diuretic; leaves especially valuable in infusion in dysentery.

Epigæa repens. Gravel Plant, Trailing Arbutus.

Ind., abundant throughout the pineries, in light sandy soil; leaves diuretic, astringent.

Epilobium angustifolium. Willow Herb.

Ind., abundant in low, newly cleared lands; roots and leaves tonic and astringent.

Equisetum hyemale. Scouring Rush.
" *lævigatum.* Horsetail.
" *robustum.* Shawm Grass.

Ind., abundant in all wet grounds in L. P.; plants are excellent diuretics.

Erechthites hieracifolius. Fireweed.

This plant is very common in all new lands the second or third year after they have been opened; an essential oil obtained from it is employed as an antispasmodic.

Erigeron Canadense. Canada Fleabane.
" *Philadelphicum.* Philadelphia Fleabane.
" *pusilum.* Butterfly Weed.

Ind., abundant in fields; whole plant used; activity depends chiefly upon an essential oil, which is used as an astringent and styptic for internal hæmorrhage.

Erythronium Americanium. Adder's Tongue.

Ind., abundant in S. of L. P., near moist woods; root and leaves used when fresh, acrid, and stimulant, which properties are lost by drying, so that a farinaceous food can be prepared from the root.

Eupatorium ageraitoides. White Sanicle.
" *aromaticum.* White Snakeroot.
" *perfoliatum.* Boneset.
" *purpureum.* Queen of the Meadow.

Nat. ord. Asteraceæ; the two first are used alike; aromatics, antispasmodics boneset; is abundant here as everywhere in the north west, reported so to me in every county in the State. Queen of the Meadow is found very plentifully in the low grounds

Cytisus scoparius.. Broom.

Nat., cultivated; seed and dried tops of branches used.

Datura stramonium. Stramonium, Thornapple.

Ind., very common around waste places, particularly so around old ruins in and near Detroit; leaves should be collected in September; seeds in October and November.

Daucus carota. Wild Carrot.

Ind., reported abundant in Ionia county; leaves, root, and seed employed.

Delphinium consolida. Larkspur.

Nat., growing wild in woody places; seeds and root employed.

Dentaria laciniata. Tooth Root.

Ind., stimulant, anodyne.

Dianthus caryophyllus. Red, or Clove Pink.

Nat., the flowers form the flavoring and color for delicate syrups; useful as an adjuvant and corrective, and vehicle for other remedies.

Diervilla Canadensis. Bush Honeysuckle.

" *trifida.* Yellow Diervilla.

Ind., plants abundant in S. W. of L. P.; said to be usefully employed in calculous affections, in gonnorrhœa, and as an antisyphilitic.

Digitalis purpurea. Foxglove.

Nat., not very plentiful in our State.

Dioscorea villosa. Wild Yam.

Ind., I cannot learn that it is plentiful, however.

Dirca palustris. Leatherwood, Moosewood.

Ind., reported in St. Clair county, but I think not abundant in the State any where.

Dododecantheon martensis. Cowslip.

Ind., abundant in L. P. Root sedative.

Drosera rotundifolia. Sundew, Linden.

Nat., not common; fresh juice, from its acridity, used to destroy warts; employed in France as a pectoral.

Cupressus thyoides. White Cedar.

Ind., not plentiful; an essential oil distilled from tops and leaves.

Cuscuta Americana. American Dodder.

Ind., plant tonic, antiperiodic, not plentiful.

Cydonia vulgaris. Quince.

Nat., cultivated extensively in gardens; seeds mucilaginous.

Cynara scolymus. Garden Artichokes.

Nat., abundant; expressed juice of leaves said to be alterative.

Cynoglossum amplexicaule. Wild Comfrey.
" *Morrisoni.* Dysentery Weed.
" *officinale.* Hound's Tongue.

Ind., leaves of first are smoked like tobacco; the C. Morrisoni is found abundantly in S. W. of L. P., in stony grounds; the root is mucilaginous and tonic; its astringency also renders it valuable in dysentery, whence its name. Hound's tongue is abundant about Detroit; plant and root demulcent and sedative.

Cypripedium acaule. Low or Stemless Ladies' Slipper.
" *candidum.* White-flowered Ladies' Slipper.
" *parviflorum.* Nerve Root.
" *pubescens.* Yellow Ladies' Slipper.
" *spectabile.* Showy Ladies' Slipper.

Nat. ord. Orchidaceæ. The plants of this genus are very abundant in our rich moist grounds, and from their beautiful flowers and showy forms, are of the most elegant of nature's ornaments; though all are used as nervines, indiscriminately, yet the C. pubescens is said to be preferred; those growing in dark, very moist places are said to develope narcotic qualities; the extent of the use of the root of these plants in domestic practice, and by the "Eclectics," renders them worthy of further investigation.

Cyprus oleonorus. Bullrush.

Ind., abundant in still, shallow waters; diuretic.

Coptis trifolia. Goldthread.

Ind.; very abundant in boggy woods, in all parts of the State in U. P.; especially so in St. Clair and Clinton Counties.

Coreopsis tricosperma. Tickseed.
" *tripteris.* Tickseed Sunflower.
" *palmata.*

Ind.; plants used as an alterative; plentiful in lower half of L. P.

Coriandrum sativum. Coriander.

Nat.; cultivated to some extent for the seed.

Cornus circinata. Round-leaved Dogwood.
" *Florida.* Boxwood, Dogwood.
" *sericea.* Rose Willow, Swamp Dogwood.
" *paniculata.*

Nat. ord., Cornaceæ; very abundant in the four lower tiers of counties, not found in the pineries; the bark is tonic and astringent, and is substituted in "Eclectic" practice for Peruvian bark, in cases of intermittents; they all possess analogous properties, and are used indiscriminately, although the C. Florida is most generally employed. The bark from the stems, roots, and small branches should be collected early in the spring, before the tree is in full inflorescence.

Corydalis formosa. Turkey Corn.

Ind. reported abundant in S. W. of L. P.; rare in middle and north of State, and I doubt its collection being profitable in our State.

Corylus Americana. Hazle Nut.
" *rostrata.* Beaker Hazle.

Ind., abundant in S. of L. P.; bark considered tonic diuretic; oil of seeds used in inflammation of the kidneys.

Crocus sativus. Saffron.

Ind., cultivated to some extent for supply of market.

Cunila meriana. Ditany.

Ind., abundant; herb employed as a carminative and antispasmodic; found plentifully in dry, shady places.

Clematis crispa. Common Virgin's Bower.
" *erecta.* Upright Virgin's Bower.
" *flamula.* Sweet-scented Virgin's Bower.
" *viorna.* Leather Flower.
" *vitalba.* Traveller's Joy.
" *Virginiana.* Virgin's Bower.

The three first are nat., cultivated in gardens; the other are ind., and abundant, particularly the C. viorna, which is found in dry shady woods in S. of L. P. All belong to the nat. ord. Ranunculaceæ, all possess acrid properties; the ind. varieties may be substituted for those of foreign growth; the fibres of the C. Virginiana have been used to make paper.

Cochlearia armoracia. Horseradish.
" *officinalis.* Scurvy Grass.

First nat., cultivated and growing wild abundantly; the second ind.; not common.

Collinsonia Canadensis. Hardpack, Richweed.
" *cordata.* Horseweed.
" *ovata.* Ox balm.
" *scabra.* Heal-all, Stone-root.
" *verna.* Hard-hack.

All ind.; abundant found in rich lands of moist woods, plant and root used, tonic, astringent; root more particularly employed in urinary complaints.

Comptonia asplenifolia. Sweet Fern.

Nat.; abundant in N. of St. Clair Co., growing in light sandy soil, in dry stoney woods.

Conium maculatum. Conium, Poison Hemlock.

Nat.; plentiful near M'Clemans in Macomb Co., and so reported in Monroe Co. and Saginaw County.

Convallaria maialis. May Lily, Lily of the Valley.
" *multiflora.* Giants, Solomon's Seal
" *panduratus.* Man in the Earth.

Ind.; abundant in L. P. generally, the C. mult. particularly, in Shiawasse Co.; the flowers of the C. maialis are aromatic, errhine and cathartic.

Chimaphilla maculata. Spotted Wintergreen.
" *umbellata.* Prince's Pine.

Nat. ord., Ericaceæ; ind.; abundant in N. of L. P., and throughout U. P. These plants are beautiful evergreens, and grow in the greatest profusion in the high cold regions of the U. P., the plants of both are used as tonics, diuretics and alteratives, they go under a variety of common names, such as Pipsissewa, Prince's Pine, Wintergreen, Umbrella plant, Capstain plant, Finger board, Ground holly, etc.

Chrysanthemum leucanthemum. White-weed, Ox-eye Daisy.

Nat.; abundant, a common weed, flowers used.

Chrysosplenium vulgare. Water Carpet.

Ind.; abundant, plant aperient, diuretic.

Cichorium endivia. Garden Endive.
" *intybus.* Suckory, Chickory,

Both nat. and abundant; plant of first, tonic, laxative, diuretic. The root of chickory is largely employed for making a fictitious extract of dandelion.

Cicuta maculata. Water Hemlock.

Ind.; very abundant along streams and rich moist grounds; plant sometimes used as a substitute for conium. Dr. Norton, of Minnesota, in a communication to the Peninsular Medical Journal, some three years ago, highly recommended this plant as a specific in nervous and sick headache.

Cimicifuga racemosa. Black Cohosh, Black Snake-root, U. S.

Ind.; very abundant in rich grounds all through the south.

Circea alpina. (Linn.)
" *luteitana.* Enchanter's Nightshade.

Nat., not common.

Cirsium arvense. Canada Thistle.

Ind.; not as common as in other States, though we have *enough* of it; root considered tonic.

Centaurea benedicta. Blessed Thistle.

Nat.; abundant in S. W. of L. P., leaves used; should be gathered in June, and dried in the shade quickly. An infusion of the leaves said to be useful in dyspepsia.

Cephalanthis occidentalis. Button Bush, Pond Dogwood.

Nat. ord., Rubiaceæ; abundant in lower counties of L. P., found upon the borders of small streams, etc.; bark is tonic and febrifuge.

Cerasus (*Prunus*) *Virginiana.* Wild Cherry.

Ind.; very abundant throughout the unsettled portions of L. P., more particularly in S. W. of it; the bark of the root should be collected only, and in the month of September and October, as at this time, it contains the largest proportion of amygdalin.

Chara occidentalis. Water Feathers.

Ind.; root employed, abundant in S. of L. P.

Celastrus scandens. False Bittersweet.

This climber is plentiful throughout the L. P., growing in rich soils of woods, and climbing upon trees, shrubs, rocks, etc. The bark of the root is alterative and narcotic; externally it is used for certain cutaneous affections, as a dressing also in ointment for indurated breasts; farmers employ it for tumors and swellings in bags of cows.

Chelidonium majus. Great Celandine.

Nat.; very abundant in L. P., found on rocky hilly places, root and leaves used, possesses purgative and diuretic properties.

Chelone glabra. Balmony, Snake-head.

Ind.; reported plentiful in S. W. of L. P.

Chenopodium ambrosioides. Sweet Pigweed.
" *anthelminticum.* Wormseed.
" *botrys.* Jerusalem Oak.

Nat. ord., Chenopodiaceæ; ind.; abundant in waste places throughout L. P.; the C. anth. has been cultivated some in St. Joseph County, for the distillation of its oil. C. botrys is used in catarrh and asthma.

Infusion in water seems to dissolve the active matter, as the tea thus made produced the same effect as did the tincture.

From this experience, I am led to believe that an extract might be obtained from the bark of the hickory tree that would take the place of quinia in the treatment of bilious diseases, resulting from the derangement or morbid action of the liver, and the digestive system generally."

The genus Carya belongs to the order Juglandaceæ, of which the family Juglans are employed in medicine, but the authorities do not give any medical power to the Carya at all, and it may be that Mr. Caffinbury's experience is valuable to the profession.

Cassia chamæcrista. Prairie Senna.
" *Marilandica.* American Senna.

Both ind., the latter rare, the other sometimes called Partridge tea, grows abundantly upon the small prairies in the south and west of the State, and forms a good substitute for C. Marilandica.

Castanea vesca. Chesnut.

Nat.; common, bark diuretic, tonic.

Caulophyllum thalictroides. Blue Cohosh, Squaw Root, Pappoose root.

Ind.; very abundant in northern half of L. P., commonly found in moist rich soil near streams; the root is sweetish, pungent, and is considered valuable as an emmenagogue, parturient, and antispasmodic, by the "Eclectics." Dr. Hewet, an "Eclectic" practitioner of Mount Clemans, states that he has found it useful in scarlatina, reducing fever, relieving swelling of the glands; never has known a case of dropsy to follow the use of this substance in scarlatina. He employs it for children with the same disease, as a gentle tonic, with success.

Ceanothus Americanus. Red Root, New Jersey Tea.

Ind.; abundant in St. Joseph's County.

Celtis occidentalis. Sugar-berry, Huck-berry.

Nat. ord., Amentaceæ; abundant in L. P.; berries used in dysentery.

Ind.; abundant in S. of L. P. Besides the value of this genus as timber, the leaves are aromatic and astringent, and the bark contains evidently a valuable bitter (tonic) principle, as may be inferred from the following. Mr. Caffinbury, of Constantine, St. Joseph Co., in a communication to me upon another subject, states as follows: "I think I have discovered that the inner bark of the common wild hickory (probably C. amara, F. S.) possesses an active stimulant and tonic virtue, and that may be used successfully as a febrifuge. But not being a physician or pharmaceutist, and never having had an opportunity of making a scientific analysis of its chemical nature, I am not prepared to speak with certainty, and base my opinion upon experience, a few incidents of which I will present; ten years ago I was afflicted with indigestion, attended with its usual concomitants, acidity of the stomach, morbid appetite, flatulency, diarrhœa, etc. I attributed this to the habitual use of tobacco, which, if not the prime cause of the disease, was an agent in its aggravation. As a substitute for the tobacco I selected the inner bark of the hickory on account of its pungent, saccharine and drastic qualities, I soon found my health improving, and that although I resumed and continued the use of tobacco, I was rarely visited with indigestion; and if occasionally visited with the symptoms, from having over eaten or having eaten of too rich or unwholesome food, that to chew the hickory bark and swallow its juice it would stimulate the stomach to action and correct the gastric fluid.

This success led me to prepare a strong fluid tincture of the bark, by cutting it small and putting it into pale otard brandy. My children (three of them) were at the time sick with the disease then prevalent in this region, arising from malarious atmosphere, and known as chill fever. I gave them of this tincture three times a day, and in two days they were well. The next year I gave it to them after the first paroxysms, and a second one did not occur; since then I have used no other remedy in my family for ague, fever and other bilious diseases, and always with like success. Upon my recommendation many others have used it with like success. Many have steeped the bark and have used the infusion thus obtained, instead of the tincture.

Calla palustris, (Linn.) Amer. Cowslip.

Ind.; abundant in middle counties; bark used for coughs in form of syrup.

Cayparis spinosa. Prickly Caper Bush.

Nat.; not abundant. Bark employed as astringent and diuretic; buds used to make a favorite pickle.

Capsella bursa pastoris. Sheppard's Purse.

Nat.; rare, astringent.

Cannabis sativa. Common Hemp.

Nat.; seeds employed in this country medicinally for their mucilaginous and emollient qualities.

Capsicum annuum. Cayenne or Red Pepper.
" *baccatum.* Yellow Pepper.
" *minimum.* Bird Pepper.

Nat.; cultivated to some extent.

Cardamine rhomboides. Ladies Smock.
" *hirsuta.*
" *pratensis.* Cook's Flower.

Ind.; abundant in S. W. of L. P., and flowers of C. pratensis used as antispasmodic; root of C. rhomboides, cathartic, diuretic and nervine.

Campanula Americana. Throatwort.
" *erinoides*, (Linn.) Prickly Bell Flower
" *rotundifolia*, (Linn.) Flax Bell Flower.

Ind. and nat. Not common; used in decoction, in relaxation of the fauces.

Carthamus tinctorius. Safflower, Dyer's Saffron.

Nat.; cultivated by farmers to some extent; the florets affording a fine yellow dye; it is also used as a substitute for Crocus.

Carum carui. Caraway.

Nat.; cultivated largely by Germans for home use.

Carya amara. Bitter-nut Hickory.
" *porcina.* Pig-nut Hickory.
" *sulcata.* Shellbark Hickory.

Nat. Ord. Betulaceæ. Ind; the B. lenta is plentiful in the lower portion of L. P.; the young bark is used as a tonic, stimulant, and aromatic. As the aromatic principle of the B. lenta is identical with that of the Gaultheria procumbens, it is presumed that, in those districts were it is abundant, the aromatic oil might be profitably obtained from it. The canoe birch abounds in the U. P., and its smooth inner bark is much employed by the Indians for the manufacture of tents, canoes, and a variety of useful and ornamental articles.

Bidens frondosa. Beggar's Tick, Cuckold.
" *tripartita.* Spanish Needles, Swamp-Beggar's Tick.

Ind., common everywhere, in cultivated places; plant, root, and seeds used as expectorants, and emmenagogues. Dr. S. W. Williams states, that an infusion of the seeds formed into a syrup with honey, is good for the hooping cough.

Blitum virgatum. Slender Blite.

Nat. Ord. Rosaceæ, or Chenopodeaceæ. Ind., not common.

Boletus ignarius. Agaric.

Ind., reported abundant in S. W. of L. P.

Botrychium fumaroides. Grape Fern, Consumption broke.
" *virginicum.* Rattlesnake Fern.

Ind., abundant in L. P. Astringent and expectorant.

Buxus sempervirens. Box.
" *suffruticosa.* Dwarf Box.

Nat.; not abundant, leaves possess valuable cathartic and alterative powers.

Cactus opuntia, (*Opuntia vulgaris.*) Prickly Pear.

Nat.; rare.

Cakile Americana, (Nutt.) Sea Rocket.

Ind.

Calendula officinalis. Marigold.

Nat., very abundant in lower counties of L. P., blossoms used as a substitute for saffron.

Aster æstivus. Sampson Snakeroot.

" *puniceus.* Cocash, Red Stalked Aster.

Nat. ord. Asteraceæ. The last only is ind. and abundant; it is found in swamps, near sluggish streams throughout the lower peninsula; root employed in rheumatism.

Astragalus canadense, (Linn.) Milkvetch.

Atropa belladonna.

Nat., not plentiful in our State.

Avena sativa. Common Oat.

" *strictus.* Wild Oat.

1st, nat., cultivated largely; it is much employed in the Canadian provinces as food, as it is in Europe. 2d, ind., but not common; we have none of the peculiar land required for the plant to flourish.

Baptisia alba. Prairie Indigo.

" *tinctoria.* Wild Indigo.

Ind., the first abundant on the prairies of the S. W. of L. P., and it may be substituted for the second, which is that most used and which is found very abundantly, both in dry and moist grounds in Jackson county; bark of the root and leaves used as an antiseptic.

Benzoin odoriferum. Fever Bush, Spice Bush, Wild Allspice.

Ind., abundant throughout lower half of L. P., in moist, shady, rich lands; bark and leaves aromatic, and used as tonics and stimulants.

Berberis vulgaris. Barberry.

Ind., I cannot, learn, however, that it is plentiful, and think it is not common in our State.

Betula excelsa. Yellow Birch.

" *glandosa.* Scrub Birch.

" *lenta.* Sweet, Birch, Black Birch.

" *papyracea.* Paper or Canoe Birch.

middle and south of lower peninsula, reported plentiful in Monroe county; the corm is used in the recently dried state; it is acrid and expectorant; the drying of the root dissipates the volatile acrid principle, and it then consists mostly of starch; it should be collected in spring, sliced transversely, and dried on strings, after the manner of apples.

Asarum Canadense. Wild Ginger, Canada Snakeroot, Colt's-foot, Snakeroot, Indian Ginger, Sweet Snakeroot.

Ind., very abundant, in middle of lower peninsula, in shady woods; reported very plentiful in Tuscola county, where the root is largely developed; the rhizoma should be collected, separated from the rootlets, and dried in the shade; it is an aromatic stimulant, and in our State is much employed as a masticatory, to sweeten the breath, etc.

Asclepias incarnata. White Indian hemp.

" *pulchra.* Swamp Silkweed.

" *syriaca.* Silkweed.

" *tuberosa.* Pleurisy Root, White Root.

Nat ord. Asclepiadaceæ. The roots of the two first are used as anthelmintics; that of the A. syriaca is considered by Dr. Paddock, of Pontiac, to be one of the most reliable of diuretics, but produces a scratching feeling in the throat by irritating the mucous membrane. The A. tuberosa is very abundant throughout the lower peninsula, in sandy soil; it is well developed, and thousands of pounds are now annually exported from our State. This root is rightly held in high estimation.

Asparagus officinalis. Asparagus.

Nat., cultivated generally in gardens; young shoots and root employed as diuretics.

Aspidium felix mas. Male Fern.

" *felix femina.* Female Fern.

Ind., abundant in the pine lands.

Asplenium ebeneum. Spleenroot.

" *thelypteroides.* Silvery Spleenroot.

Ind., not common; root used formerly as a pectoral, being subastringent and pectoral.

Arctostaphylos uva ursi. Uva Ursi.

Ind., plentiful in the pine barrens of the L. P., and could be collected to considerable profit.

Arethusa bulbosa. Arethusa.

Nat. ord. Orchidaceæ, ind. in L. P. Bruised bulbs employed as cataplasms for tooth-ache, tremors, &c.

Argemone Mexicana. Thorn-poppy.

Nat. ord. Papaveraceæ; nat. inspissated juice employed in Mexico as a hydragogue cathartic.

Amelanchier (*Aronia*) *botryapium.* June-berry, Shad-berry, May-flower.

" *ovalis.* Meadow bush.

" *sanguinea.*

Ind., abundant in S. half of L. P.

This beautiful shrubby tree is in full flower in our wet, swampy woods around Detroit, early in May, before the trees are in leaf, and it forms a striking and beautiful sight. The flower is white and nearly scentless; they are, in their freshly dried state, highly recommended by Dr. Allen, of our city, as a powerful anodyne in various nervous affections, in uterine diseases, and to assuage the after-pains of labor. The flowers are exhibited in infusion.

Aristolochia serpentaria. Virginia Snake-root.

Ind., rare.

Arnica montana. Arnica, Leopard's bane.

Nat., cultivated by way of experiment only, so far.

Artemisia abrotanum. Southernwood.

" *absinthium.* Wormwood.

" *santonica.* Tartarian Southernwood.

" *valgaris.* Mugwort.

Nat. ord. Asteraceæ. Nat., quite abundant throughout S. of lower peninsula; the A. absinthium has been cultivated in St. Joseph's county for its essential oil, but not to any extent.

Arum triphyllum. Wild Turnip, Indian Turnip, Dragon Root.

Nat. ord. Araceæ. Ind., abundant in rich, moist woods, in

Apios tuberosa. Pully root, Ground nut.

Nat. ord. Leguminosa. The root esculent; can be used as a substitute for the potato; common in the S. W. of L. P.

Apium petroselinum. Parsley.

Naturalized, cultivated in gardens; root, leaves and seeds used.

Apocynum androsæmifolium. Bitter-root, Dogsbane.
" *cannabinum.* Black Indian Hemp.

Nat. ord. Apocynaceæ. Bitter-root is ind.; found plentifully throughout the State, on sandy ridges, hill sides and in woods. Most employed as a tonic, emetic and laxative; considered very valuable by the "Eclectics." The Indian hemp root is abundant in dry soil in the lower tier of counties of L. P. Dr. Ed. Dorsch states, that in combination with podophyllum it acts upon the liver and the bowels so admirably that he has almost given up the use of calomel in cases of bilious fever and induration of the liver, which have been considered to yield only to mercurials. It has, I believe, of late, been recommended by a physician of Virginia as an anti-periodic of great power. In a communication to the Peninsular Journal, vol. ii. p. 437, great power is ascribed to it in certain uterine diseases.

Aralia hispida. Dwarf Elder, Wild Elder.
" *nudicaulis.* Amer. or false Sarsaparilla.
" *racemosa.* Amer. Spikenard.
" *spinosa.* Tooth-ache tree, Angelica tree.

Nat. ord. Araliaceæ; ind., very abundant. The American Sarsaparilla is collected in large quantities; being found throughout the lower Peninsular in rich, moist woods. It is largely employed as a substitute for Smilax sarsaparilla, which it resembles in alterative power. The spikenard is popular in domestic practice as a remedy in pulmonary troubles. The A. spinosa is not common, and does not abound in sufficiency to pay for collection.

Arcteum lappa. Burdock.

Here, as everywhere throughout the Northern States, this plant is abundant. The root, seeds and leaves are used.

Amygdalus persica. Peach.

Cultivated in all parts of the L. P.; leaves, inner bark, flowers and pits used in medicine, all of which are rich in amygdalin and emulsion, producing hydrocyanic acid.

Anagallis arvensis. Red Pimpernel, Red Chickweed.

Nat.; abundant in Cass, St. Joseph and Berrien counties; leaves bitter, acrid, recommended as anti-scorbutic.

Andromeda arborea. Sorrel Tree.
" *calyculata.* Leather Leaf.
" *polifolia.* Wild Rosemary, Andromeda.

Ind.; abundant in south of State. The two last named are poisonous, the leaves of the first are pleasantly acid to the taste, those of the last are irritant, errhine.

Anemone namorosa. Wood Anemone.
" *patens.* Wind Flower.

Nat. Ord. Ranunculaceæ. Ind.; abundant in south half of L. P.

Anethum graveolens. Dill.

Nat., cultivated by the Germans for its seed.

Angelica archangelica. Archangel.
" *atropurpurea.* Masterwort, Purple Angelica.

Nat. order, Apiaceæ; ind., abundant in the moist woods and meadows throughout the S. W. of L. P.; leaves, root and seed possess aromatic properties.

Antennaria dioicum. White Plantain.
" *margaritacea.* Pearl-flowered Life-everlasting.

Nat. ord. Asteraceæ; ind., found plentifully in the south of L. P. in dry, high woods; leaves anodyne, astringent.

Anterrhinum linari. Toad-flax.

Nat., herb used.

Anthemis cotula. May weed, Low Chamomile.
" *nobils.* Chamomile, (Roman.)

First, ind., and common here as everywhere; the second nat., and cultivated more as an experiment, than any other purpose.

Alnus rubra. Red or Tag Alder, common or
Vel. serrulata. Smooth or American Alder.

Ind.; very plentiful throughout whole of L. P.; it is one of the great powers of the "Botanics," possessing in the bark, which is the part used, tonic and some slight alterative power.

Agrimonia eupatoria. Stickwort, Agrimony.

Nat. Ord. Rosaceæ. Ind.; abundant in S. of L. P., in open fields; leaves and root used; former aromatic, latter astringent.

Althæa officinalis. Marsh-mallow.
" *rosea.* Hollyhock

Nat.; cultivated somewhat, but our market is supplied entirely with the foreign and better prepared root of the A. officinalis; the flowers of the other are used much in domestic practice as a mucilaginous demulcent.

Amaranthus altissimus. Lovely Bleeding.
" *hypochondriacus.* Amaranth.

Nat. Ord. Amaranthaceæ. Ind.; abundant, leaves astringent, considered particularly useful in uterine hemorrhages.

Ambrosia artemisiafolia. Roman Wormwood, Ragweed.
" *trifida.* Tall Ambrosia, Rich Weed, Horse-cane.

Nat. Ord. Asteraceæ. Ind.; abundant in L. P., along streams and in low grounds. The A. trifida was used by the Indians to make ropes; the leaves are employed by them in after-pains of labor, and as a nervine.

Ampelopsis quinquefolia. Five-leaved Ivy, Virginia Creeper, American Ivy, Eye-bright.

Nat. Ord. Vitaceæ. Ind.; abundant in S. W. of L. P. It is a climber, and found in woody thickets very plentiful. It has lately been recommended by Dr. J. McCall, in the Memphis Jour. of Med., as a remedy for dropsy. He recommends that the bark be collected late in autumn; he employs it in infusion and decoction, and states that it favors absorption and elimination of matter through all the outlets of the system, rather than to act upon any one secretion.

St. Joseph's County; possesses tonic power, and used by botanic M. D.'s in uterine diseases.

Alchemilla vulgaris. Ladies mantle.

Nat., rare; employed formerly as an astringent in hemorrhage.

Aletris farinosa. Unicorn Root, False Aloe, Squirrel-corn Root, Star Grass, Colic Root.

Nat. ord. Liliaceæ, (Lindley.) Ind. abundant in the sandy, dry soil of pine barrens, reported abundant in the south part of Saginau county. The root, which is the portion collected, is small, crooked, blackish and intensely bitter; it is much employed by the "Eclectics" in the dry state as a bitter tonic, and I believe Mr. Merrill has named a bitter extractive or resin obtained from it, Aletrin; the term unicorn root, by which this plant is best known, is also applied to the Helonias dioica, from which, however, it essentially differs. The root is recommended to be collected after the fall of the flower, but there seems to be difference of opinion in relation to the proper time of collecting the officinal portion of plants. Among others, Dr. Edward Dorsch considers spring time to be best for collecting roots and leaves, before flowers or blossoms appear; bark should be collected in winter and spring—February and March.

Alisma plantago. Water Plantain, Mad-dog Weed.

Ind.; abundant in ponds and still shallow water of S. W. of L. P.; the herb is rubefacient and vesicant.

Allium cepa. Onion.
" *canadensis.* Meadow Garlic.
" *norrum.* Leek.
" *schanophrasum.* Chives.
" *sativum.* Garlic.

Nat. ord. Liliaceæ. All nat., cultivated largely and growing wild in abundance. Dr. Wilson, of Port Huron, states that the Allium cepa is described in the books as stimulant, diuretic and expectorant. I have found it (he says) narcotic, and have used the expressed juice with apparent benefit as an anodyne, narcotic, diuretic in vesical irritation, and with apparently satisfactory results.

Achillea ptarmica. Sneezewort.

Ind.; abundant in S. W. of L. P.; found near fence rows in moist spots; the taste of the fresh root is much more pungent than that of yarrow, resembling more the pyrethrum.

Aconitum napellus. Aconite, Monkshood.

Nat.; not common.

Acorus calamus. Sweet Flag, Calamus.

Ind.; abundant throughout the L. P. in wet spots; the rhizoma should be carefully cleaned, and the exterior portion scraped off before it is dried.

Actæa alba. White Cohosh.

Nat. ord., Ranunculaceæ; ind., abundant in L. P., in the richer soils of forests; the rhizoma possesses violent purgative power, and is used as a substitute for black cohosh and blue cohosh.

Adiantum pedatum. Maiden-hair, Rock Fern.

Ind.; not very common; the plant is slightly aromatic, and upon comparison with the best of the foreign imported plant (Adiantum capillus veneris,) it seems to me to be better, more active; it is used in the form of a syrup for coughs, and a syrup prepared so as to preserve its aromatic qualities has been employed in this country for flavoring mineral water.

Æsculus glabra. Buckeye.
" *hippocastanum.* Horse-chestnut.

The first, ind., the second, nat.; abundant in lower half of L. P.; the young bark of the indigenous variety is employed as a suitable substitute for that of the nat. variety; the active principle is termed Æsculin.

Agrostis alba. White-top.
" *clandestina.* Sprengle.
" *vulgaris.* Red-top.

Ind.; abundant.

Ajuga chamæpitys. Ground Pine, Bugle.

This ind. creeper is abundant in S. W. of L. P., in and around

from which spruce beer was formerly made; I believe the leaves can be used for the same purpose.

Abutilon avicennæ. Indian or Yellow Mallow, Velvet leaf.

Nat. Ord.* Malvaceæ; ind., reported abundant in Morrow County. Dr. Dorsch states that he finds the leaves contain mucilage-like leaves and root of Althea officinalis, and that they can be used in similar cases.

Acalypha Virginica. Three-seed Mercury.

Ind., rare; leaves and root employed as expectorants and diuretics.

Acer alba.	White Maple.
" *ericocarpum.*	Silver Maple.
" *nigrum.*	
" *striatum.*	Striped Maple.
" *saccharinum.*	hard or Sugar Maple.
" *rubrum.*	Soft Maple.

Ind., abundant; the inner bark of this gum contains an astringent principle, probably tannin, and a peculiar bitter matter, rendering it valuable as a tonic and diuretic. The bark of the A. rubrum has been employed in decoction for certain cutaneous diseases, and as a lotion for sore eyes, by the Indians. The principal medicinal value of the A. saccharinum resides in the sugar made from its sap. This tree is abundant in isolated patches throughout the L. P., and in the eastern portion of the L. P. The Ojibways of the north make large quantities of sugar from it, which, however, has usually a peculiar, slightly bitter taste. Instead of appearing in market in cakes, as usually found, it is granulated and packed in canoe-shaped packages, formed of the bark of the canoe birch tree.

Achillea millefolium. Yarrow.

Ind., abundant in lower tier of counties of L. P.; this plant lately recommended as an emmenagogue.

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* The following abbreviations are used in this paper, viz., *Nat. Ord.*, Natural Order; *Ind.*, Indigenous; *L. P.*, Lower Peninsula; *U. P.*, Upper Peninsula; points of the compass represented by appropriate lette *N at.* Naturalized.

The habitat of this tree is usually near streams, and in swampy spots, growing with the tamarac, from which it easily distinguished by the fact of its losing its leaves in the spring, while the latter loses them in the fall.

There are two methods of collecting the resin of the hemlock, one of which consists of cutting cup-like incisions into the body of the living tree, and removing the soft resin as it exudes; the other, and most common one, is to remove the wood and bark around the knobs or knots of the felled trees, which are rich in resin; these being placed in water in a large kettle, the resin is boiled out, and rising upon the top is skimmed off and further purified by remelting and straining. The product of this method is not so good as that by the former one, the heat to which it is exposed necessarily driving off much of the essential oil. Not content, however, with making this gum by an inferior method, the collectors often put their gums into market sophisticated with common resin to the extent of seventy per cent. The commercial oils of spruce and hemlock are one and the same thing; and are distilled from the boughs of the Abies Canadensis. The mode of proceeding is as follows, related to me by Mr. David Bales, of Livingston County, who does a large business in distilling the oil. The trees are cut down and the boughs collected only; these are cut up fine and subjected to a distillation with water, in a portable copper still and worm, capable of holding about one hundred gallons, which is so arranged that it can be transported in the woods, and erected quickly upon a temporary arch; two pails full of boughs (about 8 lb.) are calculated to yield one ounce of oil, or about three pints to one running of the still, which occupies from thirteen to twenty-four hours, according to circumstances, (fuel, wind, etc.) The distilling is done only in winter, when the tree is richest in oil, and labor is cheapest; the price which the oil brings in market, is from twenty-five to forty cents per pound, upon the average. I understand that large quantities of hemlock oil are distilled in Madison Co., New York; I believe the Association a year or so ago asked information upon the manufacture of hemlock oil, without success. The young branches of the hemlock spruce are employed in domestic practice for making stimulating fomentations. From the A. nigra is made the essence of spruce,

tility and variety of its soil, the diversity of its climate, its, as yet, comparative newness, all seem to render its flora exceedingly rich in variety and abundance. This State has an area of nearly 36,000,000 of acres, of which but about 2,000,000 are cultivated. Aside from its mineral wealth in copper and iron, its most valuable resources are its magnificent forests of timber, particularly those belonging to the order Pinaceæ. The surface of the lower peninsula is rather level, the central elevation being slight; it is, however, gently rolling, and greatly diversified with small rivers and lakes, and possesses as much rich, valuable land for farming purposes as any State of similar area. The upper peninsula, on the contrary, is mountainous and rough, and possesses a cold, health-giving, and invigorating climate.

I am indebted for the information embodied in the following list, to very many of the medical gentlemen of our State, who, upon application, cheerfully afforded me the knowledge required. I have endeavored to condense the list as much as practicable without detracting from its completeness, and have chosen an alphabetical arrangement, rather than the natural one, on account of its facility for reference.

Abies balsamea. Balsam of Fir.
Abies Canadensis. Hemlock, or Hemlock Spruce.
Abies nigra. Black Spruce.

Trees of the order Pinaceæ abound in the greatest profusion throughout both peninsulas, especially in the north; the A. balsamea forms one of the most beautiful of ornamental shade trees, from its perfect proportions and graceful form; its juice, which is so much employed as a stimulant, expectorant, and vulnery, is collected in the northern peninsula, by the Ojibway Indians to some extent, but more profitably by the attachees of the Hudson's Bay Co. The Indian method of collecting it is very primitive, and consists of piercing the external hardened coating of the blister-like exudations of juice, and receiving the contents in bottles. Prepared in this way, it is of a beautiful, clear, light-straw color, and of a pleasant, aromatic odor.

The A. Canadensis, besides a valuable timber, yields a bark important to the tanner, the inner portion of which is often used in medicine for its astringency, and also the commercial oils of hemlock and spruce, and hemlock gum, or Canada pitch.

SCIENTIFIC REPORTS AND ESSAYS.

THE MEDICINAL PLANTS OF MICHIGAN.

By Frederick Stearns, Detroit, Michigan.

In presenting a paper to the American Pharmaceutical Association upon the medical plants of my State, I would premise my remarks upon them by stating, that in collecting facts I have especially directed my attention towards ascertaining the names and localities of those most abundant and important in the Materia Medica, with a view more particularly of developing their commercial value, as one of the resources of our State; at the same time I have sought to collect facts, new and of interest, in relation to nomenclature, therapeutical uses, botanical characteristics, etc., such as would enhance the value of my paper.

I think it becomes us to endeavor to increase, by all possible means, the knowledge already possessed, concerning the habitat of those indigenous and naturalized plants, the use of which in medicine of late years has so greatly increased, that they are now considered important items in the commercial transactions of the dealer in medicine.

It is presumed that accurate knowledge of the places where the plants alluded to could be most abundantly and cheaply obtained, would tend to render their money value more fixed, to cheapen them as such sources were developed, and thus in no small degree benefit us in a business point of view.

A report from one State alone, however, will be of but little benefit, as in order to render such knowledge practically valuable, it must include our whole country; and I hope it will be in the power of the Association to induce members from the several States represented in the Association, to collect similar information, and report thereupon to this body.

The position of Michigan, consisting of two great peninsulas, bordered by five of the great lakes of the North West, the fer-

3. All such offices, or at least the important ones, such as Boston, New York, Philadelphia, Baltimore and New Orleans, should be supplied with chemical apparatus, reagents and tests, sufficient to enable the Examiner to *test* and *try* all such drugs or chemicals as require analysis to determine their quality.

An Amendment authorizing such outlay under the respective Collectors, would be judicious and beneficial.

4. The salary or pay of the Examiner should be such as would insure the services of competent, educated men, capable of doing the duties of the office.

An Amendment increasing such salaries, at least at the important ports, and making the Examiners *appraisers* of *value* as well as quality, would add much to the efficiency of the Law. And your petitioners will ever pray.

Most respectfully,

C. B. GUTHRIE, Chairman.

REPORT ON AMENDMENTS TO DRUG LAW.

The following is the petitition presented to Congress by the Committee appointed for that purpose:

To the Honorable House of Representatives:

At the last annual meeting of the American Pharmaceutical Association, held in the city of Philadelphia, in September, 1857, the undersigned were appointed a Committee to memorialize your honorable body in regard to some alterations in the Law of Congress commonly known as the Drug Law.

In accordance with that duty, we therefore respectfully solicit your attention to the following amendments, which we believe to be absolutely needful to make the said Law what its framers designed it should be, a bar to the importation of spurious and sophisticated drugs and chemicals, and a protection to the community at large.

1. There is not sufficient activity and vigilance on the part of Collectors of Ports in executing that provision of the law requiring all condemned drugs to be within a specified time *re-exported* to the place from whence they came, or destroyed. This provision is evaded by reshipping to contiguous ports such drugs, and from thence bringing them again into the United States at some port of entry, where there is no Drug Examiner, and thus rendering the act null and void. *An Amendment* requiring all Collectors of such ports to subject such importations to the inspection of the nearest Examiner, either by package or sample, at the expense of the owner or consignee, would remedy this extensive and growing evil.

2. The *inefficiency* and *incompetency* of the incumbents of the different offices is another source of evil, and one that tends to protect rather than prevent the importation of adulterated drugs.

An Amendment, requiring such appointments to be made by the nomination of the President and confirmation by the Senate, and all applicants required to have, as is requisite in other cases in the law provided for, the confidence of the Colleges of Pharmacy, or where none exist at the port, in lieu thereof the recommendation of the Medical Association.

Presented by A. P. SHARP, of Baltimore.

Pil. Colcynth. Mag.

R.—Ext Colocynth. Comp. . . . . ʒj.
Hyd. Proto-chlor. . . . . gr. xij.
Tart. Antim. et Pot. . . . . " ij.
Ft. mass div. in pil. xij.

Pil. Colcynth. Parv.

The same mass as above divided into 24 pills.—(Dr. McKenzie.)

Elixir Calisaya Bark.

Take of Calisaya Bark . . . . . 16 oz.
Orange Peel, ... 2 "
Cardamon, ... ʒij.
Cinnamon, (Ceylon,) . . . . ʒj.
Alcohol, ... 5½ pts.
Water q. s. to displace 6½ pints tinct., add simple syrup 3 pints and Rose Water ½ pint.

Black Salve.

Olive Oil, . . . 20 oz.
Lard, ... 16 "
Mutton Suet, . . . 16 "
Litharge, . . . 14 "

Melt the oils and fats, and when hot stir in the litharge, (in fine powder,) and boil until it becomes of a brown color, then add

Resin, ... 8 oz.
Yellow Wax, . . . 8 "

Color with a small quantity of Ivory Black, and when nearly cold pour into paper moulds.

R. A. C. Pills.

R.—Rhubarb, Aloes, Calomel, } *aa* ʒj.
Ft. pill xx.

Richard's Cough Mixture.

(Dr. Wolcott Richards.)

R.—Tart. Antim. . . . . gr. j.
Pulv. Ext. Glycyrrh. . . . . ij.
Aq. fluvialis,
Syr. Scillæ,
" Tolu,
Tinct. Opii Camph. *aa*. . . . . ℥j.
Spt. Nit. dulc. . . . . ʒij.
Mix.

Richard's Chalk Mixture.

(Dr. Wolcott Richards.)

R.—Cretæ Precip.
Sacch. Alb. *aa*. . . . . ℥j
Tr. Lavandulæ Comp.
Tr. Kino, *aa*. . . . . ℥j.
Ess. Cinnamomi, ... gtt. xv.
Aq. Font., ... ℥iij.
Tr. Opii, ... ʒj.

Marshall's Pills.

(Dr. Vincent C. Marshall.)

R.—Comp. Ext. Colocynth,
Mass. Hydrarg.
Pulv. Aloes,
" Sapon. Castil.
" Rhei, *aa*. . . . . ʒj
Ft. pill. *aa*. gr. v.

Judkins' Pills.

(Dr. Wm. Judkins.)

R.—Mass. Hydr.
Comp. Ext. Colocynth. *aa*. . . . ʒj.
Ipecac. pulv. . . . . ℈j.
Pulv. Rad. Rhei, ... ℈ij.
Sapon. Castil. . . . . ʒj.
M. ft. pill. *aa*. gr. v.

oppression give a dose of Antimonial Wine before taking the syrup; and if costive, give a dose of Calomel and Rhubarb."

This prescription is so designed that a tea-spoonful shall be a dose in each case.

Comp. Syr. Morphia.

(Jackson's Cough Syrup.)

R.—Syr. Morphiæ, ... ℥iij.
" Ipecac. et Senegæ,
" Rhei Simp. *aa*. . . . . ℥j.

Mix.

SIG.—A tea-spoonful three times daily.

Receipts for the Syr. Morphia and Ipecac and Senega used in the above preparation :—

Syr. Morphia.

R.—Mur. Morphiæ, ... gr.j.
Syr. Simp. . . . . ℥j.
Ol. Sassafras, ... gtt.ij.

Mix.

Syr. Ipecac. and Senega.

R.—Rad. Polyg. Senegæ, ... ℥ij.
Ipecac. pulv., ... ℥j.
Aq. font., ... Cong.ss.

Boil the Senega root in the water until half consumed; strain, then add the Ipecac., and sugar enough to form a syrup.

Comp. Arnica Liniment.

(Huxley's Liniment.)

R.—Tinct. Arnicæ, ... ℥ivss.
Oleum Camphoræ, ... ℥ss.
Tinct. Opii. . . . . ℥j.

Mix.

Baker's Cough Drops

R.—Tinct. Hyoscyam., ... ℥iv.
" Digitalis, ... ℥ij.
Syr. Scillæ, ... ℥viij.
" Bals. Tolu, ... ℥ij.

Mix.

Dose, one tea-spoonful on going to bed.

Cincinnati, Aug. 26, 1858.

To the Chairman of Committee :—

In compliance with the duty devolving on me as one of the above Committee, I send you a few formulæ which are much used in our city, both by practitioners of medicine and the public; with a view of obtaining a greater uniformity in their preparation I forward them to you. If you should think them worthy, please present them to the Association.

Yours respectfully,

W. B. CHAPMAN.

Eberle's Purgative Pills.

(Richard Eberle, M. D.)

R.—Ext. Col. Comp,
Pulv. Scammonii,
Sub Mur. Hydr., *aa.* . . . . . ʒj
M. ft. pill, *aa.* gr. v.

Tinct. Polyg. Hydropiper.

(Prof. John Eberle.)

R.—Polygonum Hydropiper, ... ℥viij.
Alcohol dilut., ... Cong. x.
Macerate fourteen days and express.

Dr. Atlee's Nipple Wash.

(Dr. Edwin A. Atlee.)

R.—Pulv. G. Acacia, ... ʒss.
Biborate Soda, ... gr. x.
Tinct. Myrrh, ... ʒj.

Whooping Cough Syrup.

(Dr. E. A. Atlee.)

R.—For a child from six months to

	1	year,		Acid. Hydrocyan.	gtt.	i.	Syr. Simp.	℥j.
From	1	"	to 2	"	"	"	ij.	"	"
"	2	"	4	"	"	"	iij.	"	"
"	4	"	8	"	"	"	iv.	"	"
"	8	"	12	"	"	"	vi.	"	"
"	12	"	15	"	"	"	vii.	"	"
"	15	"	25	"	"	"	viii.	"	"

SIG.—"A tea-spoonful two or three times a day. If there is much

of free discussion, in the light of truth, in that self-sacrifice which should, and does, belong to our noble profession. When we see what we are now, and remember what we were—a mere handful—meeting for a specific purpose in the city of New York, in 1851, we have good reason to take courage; and by that faith which hopeth all things, to see this organization growing, enduring, increasing, until the whole Union shall see and feel, as we who are here to-day see and feel, its influence for good, for truth, for science, and for purity in all things.

Signed,

C. B. GUTHRIE.

REPORT ON LOCAL UNOFFICINAL FORMULÆ.

The Chairman of the Committee appointed to continue the compilation of unofficinal formulæ, begs leave to report, that early in the present year he addressed a circular to each member of the Committee referring to the duties of their appointment. He subsequently addressed them with a view to collect their contributions, and has received communications from three members and contributions from one, all of which are herewith appended. Your Committee infer that they have completed the unofficinal formulæ recognized by the medical profession, and consequently embraced within the intent of the Association in the appointment of this Committee, who take occasion to congratulate their fellow-members upon the limited number of such formulæ which, however necessary, tend to complicate the labors of the pharmaceutist.

Your Committee regret that they have been compelled, through the misconception of a few, to disclaim any desire to collect the formulæ for nostrums or proprietary medicines; feeling assured that the Association has no affinity with such, they had hoped that the purpose of the Committee would not be thus construed, and desire that the result of their labors may contribute to the usefulness of the Association.

Respectfully submitted,

JOHN MEAKIM, Chairman.

under that law having become so much a matter of political favoritism, instead of fitness, as to completely nullify provisions of the law, yet still that act stands upon record, and we believe the Hon. Secretary of the Treasury so far remembered its existence as to recommend its amendment last session, by the addition to articles for inspection of tea and coffee, but we have never heard that the matter got any further; yet it stands upon record as evidence of our virtuous indignation towards the authors of such iniquity. To sum up the whole matter, can we reasonably expect our people to refuse to sell, to buy, to use adulterated or sophisticated drugs, while they permit similar imposition in almost every branch of trade and commerce? Can we reasonably expect people to have faith in the purity of medicines and be willing to pay the price for them, when they spend annually a sum for patent nostrums sufficient not only to pay the entire medical bills of the sick, but buy their necessary medicines besides? Can we expect even those who give as one of their reasons for believing in that infinitesimal humbug, Homœopathy, that they cannot procure pure medicine any where else, to be cautious even about confounding sugar of milk with the powerful chemicals, in concentrated forms that so often accompany it? Can we expect an apothecary to always supply himself with that class of medicines at the extra price he must and ought to pay for them, when his next door neighbor furnishes a cheap kind that gives to the consumer equal satisfaction, and pays a better profit beside?

Where then is the hope for a better state of affairs? Shall we go on and on at this rate, doing violence to conscience, and all the principles honestly recognised among Christian men and gentlemen? We trust not; but yet we cannot say that we see any hope for reform in legal enactments, or statutory prohibitions. In a community governed by an absolute monarchy it might be attempted, possibly with success, but not here where every man is a sovereign. I see that this question is being discussed in England, and that though the question of legal prohibition finds advocates, they candidly confess that they hope more from the *elevation* of the profession, than the *prohibition* of the evil.

Our hope thus lies in this, as well as many other things, among ourselves, in ourselves, in this organization, in the light

care that his bread shall have various ingredients in it besides the legitimate and needful. Not only this, but the meat he eats, be it beef or pork, more than likely is fatted upon this same still slop, and slaughtered before it dies, and cured into bulk, prime side meat or sugar cured hams, while corned beef and dry get each their share of the luxurious diet which the aldermen before alluded to must pardon us for not believing to be the very best offered in market. Not only the necessaries but the luxuries of his day have their share; and his wines and brandies share so largely in the general depreciation that it is absolutely dangerous to prescribe them as remedial agents, however carefully they are bought. This is true, alike of Foreign and American made, some mixed in this and some in the country from whence imported, all however *mixed* oftentimes first by the importer, because the jobber requires a cheaper article than he has on hand, mixed by the jobber because of a like reason, and that his customer's vitiated taste will fail to recognise any thing but the doctored material as the wine or the brandy he wants; often mixed again by the retailer, because, honestly his profits are thus increased, so that by the time it is consumed it becomes a consumer and a positive poison. But this is by no means the the worst feature of this traffic; thousands and thousands of gallons of wine, brandy, gin, &c., never had the smell of the grape or berry upon them even, but are manufactured outright from essential oils, extracts and essences, with the meanest of corn whiskey.

But we will not pursue the details of this part of the subject further. We have said enough to illustrate what we mean by collateral facts. Now does any one wonder that we buy and sell adulterated drugs? "We don't adulterate them, you know, our druggists don't do that sort of thing." Would it not be almost a wonder, and be quoted as strong presumptive evidence of a lack of good business talents if we did not? But you know we have a monopoly of the business among our own people. No foreign manufacturer shall dare to offer his mixed wares of this kind in our markets, and to that end Congress in 1846 enacted a law, commonly known as the Drug Law, bearing upon this point. Though the appointment to office of inspectors of drugs

done, that one not somewhat familiar with that class of men would have supposed that some of the chief humbugs of the day were really counted among good company in that city. After the youth has progressed thus far, what do you expect him to believe—where is his faith in medicine? It is mixed up with nursery tales and crude remembrances of childhood, and more recent promises of newspaper puffs, which he in his verdancy has often taken for editorial truths. In this state he approximates, or enters upon mature life. Some serious illness, some well developed educational process, less or more perfect, may sweep away the rubbish, and he may replace it by the proper and legitimate value of the Materia Medica. But in the mass, how many come to this point? Nay, look at the mass of mind thus perverted in judgment, and often kept from light by prejudice or interest, and can you wonder that the facts of adulteration, startling as they may be, fail to call out such responses as we had expected, or fail to produce that profound effect looked for. This is not confined alone to the question of home adulterations of medicine by any means. It reaches to what we eat, and what we drink, yea, and what we wear.

Begin again back at infancy and see how much of life is sacrificed to this same evil. If, unfortunately, a denizen of any of our large cities, what will probably be his early diet? The so-called pure country milk drawn from cows fed with still slops and stabled in stalls three to four feet broad, which notwithstanding any white-washing of aldermanic committees, common sense alone must at once decide to be unwholesome in the extreme. If more blessed, and having a country habitation, though escaping swill fed milk, when he comes to some of the most common of childhood's diet, as tapioca, sago, corn starch, &c., the chances are decidedly in favor of his getting the mixings of potato starch and spoiled corn and oat meal, ground, well dried and nicely put up in inviting looking paper with promises on the wrappers, telling of their health-giving virtues and great value.

As life progesses he gets splitpeas and chicory with his coffee, and a sprinkle of dandelion root for flavor, and various substances with his teas, green or black, while his baker takes good

To fully understand the position of the American people on this subject, to fully comprehend why this proposition that we have stated can be true, and yet not be a subject of any great wonder or alarm, we must view the question in the light in which we have placed it; we must look at those collateral facts to which we have alluded, and see how they have affected the public mind, undermining the standing of both the physician who prescribes and the apothecary who administers or prepares, such things as are considered to have an influence in relieving sickness or promoting health.

From the earliest recollection of the child in almost all the walks of life, he is familiar with the gossip of the nurse, about remedies for this and that ailment or complaint; more than likely, hears discussions upon the propriety of dispensing with some disagreeable remedy the physician has advised, and wonders, in his childish way, whether the nurse or the medical man really knows best, and as vehemence and volubility carry great weight with children, decides that nurse is the better man. As his sphere of observation extends, some old woman of the neighborhood comes to be his oracular upon the subject of his childish diseases. A little further on he takes up the newspaper, and whether it be religious or secular, city or village, large or small, of great circulation, or limited influence, of one political faith or another, or of no faith at all, in the North or the South, all, without exception, feed his inquiring mind with histories of wonderful cures, performed by yet more wonderful remedies, attested to by D. Ds., M. Ds., Rev'ds., L.L. Ds., Judges, Esqs., Cols., Majors, &c. &c. Is it not wonderful how so many of these certificates come to be given by men of high sounding titles?

These advertisements have been so common for so long a time, that they hardly arrest our attention now, unless they are in some unusual form, or contain some new device. Thus these sellers of patent humbug suborn the press, or what is equal to the same thing, they pay for the insertion of their advertisements in such a form and shape as to lead the unsuspecting to suppose they are really editorials. Thus I saw not long since in one of our daily papers, what purported to be a notice of the eminent medical men of New York; and the thing was so cleverly

time and money to spend upon the question. You may go into any ordinary retail drug store in the whole land, east, west, north or south, outside of our large cities, where this matter has been discussed and where our profession has waked up to the fact, and you can pick up the whole list of adulterated articles in detail. Nay our cities are not free by any means, though it may not be so readily discerned.

We are not worse than our neighbors of the older world; they, England at least, have stringent laws about selling sour flour, rusty meat, stale fish, &c. But the man that does not dare to do the one, may sell impure olive or cod liver oil, cream of tartar that has twenty per. cent. of alum in it, or any thing in that shape, with impunity. Such is the testimony of their own medical men; and the same is true of this country and Canada. We do not propose to enter into any further examination of this subject now, with reference to pointing out a remedy for the evil. We have before said it is too vast; and that for any one man, committee or organization to attack it, except by throwing light upon its dark ways, would be Quixottic and futile. We do, however, propose to offer a few remarks upon the pathology of the disease, and to point out what to us at least offers some explanation of the phenomena exhibited by the facts.

What are the facts? Why that the American people buy, sell and use medicines, which they either do or ought to know are adulterated so as to deprive them less or more of their known or supposed power, efficiency and value as remedies. We assert that as a proposition not to be gainsayed or disputed. The fact is startling and well calculated to excite incredulity, but it is true nevertheless, as we can demonstrate if any one desires to follow the question up.

That incredulity will vanish, when we come to point to some collateral facts, having, as we think, a most decided and important bearing upon this point.

We are creatures of education and habit, and we may become so accustomed to things the most strange and adverse to our ordinary senses, as to find them not only deprived of their offensive properties, but positively pleasant. What is true of the physical man is more than true of his mental associations, especially if you call into play some of those controlling faculties, like avarice, ambition, or revenge.

tell you what every boy in your shop knows full well, that seven-tenths of them are mixed and impure? Shall we point out the manner in which the valuable gums are sophisticated or deprived of their proximate principles, and then resold? For what purpose, or to what end shall we do this? It would be a sorry record of disgraceful facts alike damning to the active agent and his knowingly guilty participant. Does any one think it would be a pleasant task for a July day? Let him try the experiment. Let him, for instance, not only make it a matter of personal appeal, but try the power of epistolary harvesting as well. From one he will get a letter that reads thus:

"I can not say that I have any thing to report upon home adulterations, as our druggists are not addicted to such habits." Very good, except that the plea of innocence will not avail against facts. Another says, "I know that adulteration is common, very common; I could point out some examples, such as the mixing of essential oils either with inferior oils, or spirits of turpentine or camphene, and others of this class. These facts are well known to exist, but how can we remedy them?" Another says, "The inferior class of goods sent abroad is of more consequence than the adulterations, and a source of more evil, though adulterations are unquestionably made, and that to a great extent."

You see all admit the evil, and know that it exists; all complain of it, but where is the remedy. A letter from a warm-hearted enthusiastic man, of Worcester, Mass., suggests various remedies, and, as I shall read his paper entire, you can judge of their fitness. They have been discussed before by this Association.

Does it need any argument to prove how easy the task, how rapidly he will accumulate facts?

But, says my smiling drug grinder, or jobber, or retailer of spurious wares, as he hears this sorry confession of impotency,' "You have got no facts to communicate, no data to bring forward, and you deal in mere generalities that cannot be proved." The "wish is father to the thought," and we say it in sorrow that all we have alluded to, and a thousand fold more, has been abundantly proved and can be done again, if any one has the

REPORT ON THE HOME ADULTERATION OF DRUGS.

Your Committee had hoped, up to a late day, that the strong interest manifested in the subject of Home Adulterations, at least by the members of this Association, would have found its appropriate expression in their cordial assistance and aid in furnishing the Committee with such facts and material as should have given them the foundation whereon to have made a report worthy the subject. Such, we come again before you to say, is not the fact.

But having had this matter urged upon us again and again, we can not forbear giving the subject a more mature and philosophical examination before we let it pass. Because we have only the same class of facts to report, because we come before this body of educated and intelligent apothecaries, gathered from so many sections of our country, representing so many interests and feelings, and say to them again what we have said before, that in this our enlightened age and land, this matter of adulteration has become so firmly rooted, so does it permeate all avenues and channels of business and trade, so gigantic are all its hideous proportions that one and all decline the hazard of an encounter; do not, therefore, conclude that there is nothing to be said. We have before reported the common adulterations of daily use, and to which we are all accustomed. Shall we reiterate them? telling you again how much alum you get mixed with your cream of tartar, how much brick dust with carbonate of iron, logwood with pulverized cayenne, saw dust with pulv. jalap, pulv. liquorice root with ipecac, sal nitre with iodide of potassium, mannite with quinine, common clay with blue pill, Banbury rhubarb with true Turkey, or worm eaten half rotten rhubarb ground up with East India, Maracaibo bark with true yellow or pale bark, with the color regulated with yellow ochre, which, by the way, is a common ingredient in pulv. rhubarb. Shall we go over the list of finer chemicals, and show how often their inefficiency in the hands of the medical man is attributable to their imperfect manufacture, for the purpose of cheapening the product? Shall we rehearse again the history of essential oils, and

Ext. Rhei.

℞.—Rhubarb, in moderately fine powder, ℥xij.
Alcohol, sp. gr. ·855, q. s.

Dampen the rhubarb with a small portion of the alcohol by rubbing it in with the hands; transfer to a suitable displacer, and having packed it moderately and otherwise arranged the apparatus, pour on the alcohol, and when f.℥xij. shall have passed, set aside for spontaneous evaporation until reduced one-half. Continue the percolation with the alcohol until the liquid comes away nearly tasteless. Pour the portion last obtained into a porcelain dish arranged in hot water maintained at a temperature not exceeding 160° F., and when evaporated to nearly a syrupy consistence, add the other portion, and continue the evaporation at the same temperature until reduced to the proper consistence. Avoid the use of an iron spatula.

For reasons for proposing the adoption of the above, see Journal and Transactions of the Maryland College of Pharmacy, vol. i. No. 2.

Ext. Rhei Fluid.

℞.—Rhubarb,	℥viii	Each in moderately fine powder, passed through a No. 40 sieve.
Aniseed,		
Fennel, each,	℥j	
Ginger,	℥ij	
Diluted Alcohol, (alcohol 2 parts, water 1 part) q. s.		
Sugar,	℥iij.	

Having mixed the powders, pour on sufficient of the diluted alcohol to dampen them, and transfer immediately to a suitable displacer and pack it with gentle pressure. Having properly arranged the apparatus, pour on the diluted alcohol and continue the percolation until about Oiss. has passed, or the materials are exhausted. Evaporate this in a porcelain dish, arranged in hot water of 160° F. until reduced to f.℥vj., and then add the sugar.

Submitted by
ISRAEL J. GRAHAME.

ficient water to form a smooth paste, the whole to be well mixed and transferred to a water-bath; the resin plaster, previously melted, to be now added, and the whole suffered to remain in the water-bath until all moisture is dissipated.

Emplast. Opii.

℞.—Opium, in powder,	℥ij.
Burgundy Pitch,	℥iij.
Lead Plaster,	℥xij.

Treat the opium, previously mixed with some suitable substance, by displacement with water to exhaustion; evaporate by water-bath to f.℥ij., and add it to the Burgundy pitch and lead plaster previously melted together, and arrange in a water-bath to dissipate all moisture.

Ext. Aconiti.

℞.—Aconite leaves, recently dried, in powder,	℥xij.
Alcohol,	℥xviii.
Diluted Alcohol, q. s.	

Dampen with the alcohol and pack in a suitable displacer, and otherwise arrange for percolation. Pour on the remainder of the alcohol, and when it ceases to drop, pour on diluted alcohol, and when f.℥xviij., or the alcoholic portion, has passed, put it aside for spontaneous evaporation until reduced to f.℥iij. Continue the percolation with diluted alcohol to exhaustion. Evaporate this over hot water maintained at a temperature not exceeding 160° F., until reduced to a syrupy consistence; then reduce the temperature of the hot water to 120° F., and add the alcoholic solution and evaporate to the proper consistence.

Prepare in like manner with the above

Ext. Conii.
Ext. Hyoscyami.
Ext. Belladonnæ.
Ext. Sarsaparillæ.

It is proposed to abandon all the above extracts prepared by inspissation of their expressed juices, and the adoption of these in their stead as more certain and reliable preparations. Special direction to be given to use none other than carefully dried and hermetically sealed herbs.

of free discussion, in the light of truth, in that self-sacrifice which should, and does, belong to our noble profession. When we see what we are now, and remember what we were—a mere handful—meeting for a specific purpose in the city of New York, in 1851, we have good reason to take courage; and by that faith which hopeth all things, to see this organization growing, enduring, increasing, until the whole Union shall see and feel, as we who are here to-day see and feel, its influence for good, for truth, for science, and for purity in all things.

Signed,

C. B. GUTHRIE.

REPORT ON LOCAL UNOFFICINAL FORMULÆ.

The Chairman of the Committee appointed to continue the compilation of unofficinal formulæ, begs leave to report, that early in the present year he addressed a circular to each member of the Committee referring to the duties of their appointment. He subsequently addressed them with a view to collect their contributions, and has received communications from three members and contributions from one, all of which are herewith appended. Your Committee infer that they have completed the unofficinal formulæ recognized by the medical profession, and consequently embraced within the intent of the Association in the appointment of this Committee, who take occasion to congratulate their fellow-members upon the limited number of such formulæ which, however necessary, tend to complicate the labors of the pharmaceutist.

Your Committee regret that they have been compelled, through the misconception of a few, to disclaim any desire to collect the formulæ for nostrums or proprietary medicines; feeling assured that the Association has no affinity with such, they had hoped that the purpose of the Committee would not be thus construed, and desire that the result of their labors may contribute to the usefulness of the Association.

Respectfully submitted,

JOHN MEAKIM, Chairman.

under that law having become so much a matter of political favoritism, instead of fitness, as to completely nullify provisions of the law, yet still that act stands upon record, and we believe the Hon. Secretary of the Treasury so far remembered its existence as to recommend its amendment last session, by the addition to articles for inspection of tea and coffee, but we have never heard that the matter got any further; yet it stands upon record as evidence of our virtuous indignation towards the authors of such iniquity. To sum up the whole matter, can we reasonably expect our people to refuse to sell, to buy, to use adulterated or sophisticated drugs, while they permit similar imposition in almost every branch of trade and commerce? Can we reasonably expect people to have faith in the purity of medicines and be willing to pay the price for them, when they spend annually a sum for patent nostrums sufficient not only to pay the entire medical bills of the sick, but buy their necessary medicines besides? Can we expect even those who give as one of their reasons for believing in that infinitesimal humbug, Homœopathy, that they cannot procure pure medicine any where else, to be cautious even about confounding sugar of milk with the powerful chemicals, in concentrated forms that so often accompany it? Can we expect an apothecary to always supply himself with that class of medicines at the extra price he must and ought to pay for them, when his next door neighbor furnishes a cheap kind that gives to the consumer equal satisfaction, and pays a better profit beside?

Where then is the hope for a better state of affairs? Shall we go on and on at this rate, doing violence to conscience, and all the principles honestly recognised among Christian men and gentlemen? We trust not; but yet we cannot say that we see any hope for reform in legal enactments, or statutory prohibitions. In a community governed by an absolute monarchy it might be attempted, possibly with success, but not here where every man is a sovereign. I see that this question is being discussed in England, and that though the question of legal prohibition finds advocates, they candidly confess that they hope more from the *elevation* of the profession, than the *prohibition* of the evil.

Our hope thus lies in this, as well as many other things, among ourselves, in ourselves, in this organization, in the light

care that his bread shall have various ingredients in it besides the legitimate and needful. Not only this, but the meat he eats, be it beef or pork, more than likely is fatted upon this same still slop, and slaughtered before it dies, and cured into bulk, prime side meat or sugar cured hams, while corned beef and dry get each their share of the luxurious diet which the aldermen before alluded to must pardon us for not believing to be the very best offered in market. Not only the necessaries but the luxuries of his day have their share; and his wines and brandies share so largely in the general depreciation that it is absolutely dangerous to prescribe them as remedial agents, however carefully they are bought. This is true, alike of Foreign and American made, some mixed in this and some in the country from whence imported, all however *mixed* oftentimes first by the importer, because the jobber requires a cheaper article than he has on hand, mixed by the jobber because of a like reason, and that his customer's vitiated taste will fail to recognise any thing but the doctored material as the wine or the brandy he wants; often mixed again by the retailer, because, honestly his profits are thus increased, so that by the time it is consumed it becomes a consumer and a positive poison. But this is by no means the the worst feature of this traffic; thousands and thousands of gallons of wine, brandy, gin, &c., never had the smell of the grape or berry upon them even, but are manufactured outright from essential oils, extracts and essences, with the meanest of corn whiskey.

But we will not pursue the details of this part of the subject further. We have said enough to illustrate what we mean by collateral facts. Now does any one wonder that we buy and sell adulterated drugs? "We don't adulterate them, you know, our druggists don't do that sort of thing." Would it not be almost a wonder, and be quoted as strong presumptive evidence of a lack of good business talents if we did not? But you know we have a monopoly of the business among our own people. No foreign manufacturer shall dare to offer his mixed wares of this kind in our markets, and to that end Congress in 1846 enacted a law, commonly known as the Drug Law, bearing upon this point. Though the appointment to office of inspectors of drugs

done, that one not somewhat familiar with that class of men would have supposed that some of the chief humbugs of the day were really counted among good company in that city. After the youth has progressed thus far, what do you expect him to believe—where is his faith in medicine? It is mixed up with nursery tales and crude remembrances of childhood, and more recent promises of newspaper puffs, which he in his verdancy has often taken for editorial truths. In this state he approximates, or enters upon mature life. Some serious illness, some well developed educational process, less or more perfect, may sweep away the rubbish, and he may replace it by the proper and legitimate value of the Materia Medica. But in the mass, how many come to this point? Nay, look at the mass of mind thus perverted in judgment, and often kept from light by prejudice or interest, and can you wonder that the facts of adulteration, startling as they may be, fail to call out such responses as we had expected, or fail to produce that profound effect looked for. This is not confined alone to the question of home adulterations of medicine by any means. It reaches to what we eat, and what we drink, yea, and what we wear.

Begin again back at infancy and see how much of life is sacrificed to this same evil. If, unfortunately, a denizen of any of our large cities, what will probably be his early diet? The so-called pure country milk drawn from cows fed with still slops and stabled in stalls three to four feet broad, which notwithstanding any white-washing of aldermanic committees, common sense alone must at once decide to be unwholesome in the extreme. If more blessed, and having a country habitation, though escaping swill fed milk, when he comes to some of the most common of childhood's diet, as tapioca, sago, corn starch, &c., the chances are decidedly in favor of his getting the mixings of potato starch and spoiled corn and oat meal, ground, well dried and nicely put up in inviting looking paper with promises on the wrappers, telling of their health-giving virtues and great value.

As life progesses he gets splitpeas and chicory with his coffee, and a sprinkle of dandelion root for flavor, and various substances with his teas, green or black, while his baker takes good

To fully understand the position of the American people on this subject, to fully comprehend why this proposition that we have stated can be true, and yet not be a subject of any great wonder or alarm, we must view the question in the light in which we have placed it; we must look at those collateral facts to which we have alluded, and see how they have affected the public mind, undermining the standing of both the physician who prescribes and the apothecary who administers or prepares, such things as are considered to have an influence in relieving sickness or promoting health.

From the earliest recollection of the child in almost all the walks of life, he is familiar with the gossip of the nurse, about remedies for this and that ailment or complaint; more than likely, hears discussions upon the propriety of dispensing with some disagreeable remedy the physician has advised, and wonders, in his childish way, whether the nurse or the medical man really knows best, and as vehemence and volubility carry great weight with children, decides that nurse is the better man. As his sphere of observation extends, some old woman of the neighborhood comes to be his oracular upon the subject of his childish diseases. A little further on he takes up the newspaper, and whether it be religious or secular, city or village, large or small, of great circulation, or limited influence, of one political faith or another, or of no faith at all, in the North or the South, all, without exception, feed his inquiring mind with histories of wonderful cures, performed by yet more wonderful remedies, attested to by D. Ds., M. Ds., Rev'ds., L.L. Ds., Judges, Esqs., Cols., Majors, &c. &c. Is it not wonderful how so many of these certificates come to be given by men of high sounding titles?

These advertisements have been so common for so long a time, that they hardly arrest our attention now, unless they are in some unusual form, or contain some new device. Thus these sellers of patent humbug suborn the press, or what is equal to the same thing, they pay for the insertion of their advertisements in such a form and shape as to lead the unsuspecting to suppose they are really editorials. Thus I saw not long since in one of our daily papers, what purported to be a notice of the eminent medical men of New York; and the thing was so cleverly

time and money to spend upon the question. You may go into any ordinary retail drug store in the whole land, east, west, north or south, outside of our large cities, where this matter has been discussed and where our profession has waked up to the fact, and you can pick up the whole list of adulterated articles in detail. Nay our cities are not free by any means, though it may not be so readily discerned.

We are not worse than our neighbors of the older world; they, England at least, have stringent laws about selling sour flour, rusty meat, stale fish, &c. But the man that does not dare to do the one, may sell impure olive or cod liver oil, cream of tartar that has twenty per. cent. of alum in it, or any thing in that shape, with impunity. Such is the testimony of their own medical men; and the same is true of this country and Canada. We do not propose to enter into any further examination of this subject now, with reference to pointing out a remedy for the evil. We have before said it is too vast; and that for any one man, committee or organization to attack it, except by throwing light upon its dark ways, would be Quixottic and futile. We do, however, propose to offer a few remarks upon the pathology of the disease, and to point out what to us at least offers some explanation of the phenomena exhibited by the facts.

What are the facts? Why that the American people buy, sell and use medicines, which they either do or ought to know are adulterated so as to deprive them less or more of their known or supposed power, efficiency and value as remedies. We assert that as a proposition not to be gainsayed or disputed. The fact is startling and well calculated to excite incredulity, but it is true nevertheless, as we can demonstrate if any one desires to follow the question up.

That incredulity will vanish, when we come to point to some collateral facts, having, as we think, a most decided and important bearing upon this point.

We are creatures of education and habit, and we may become so accustomed to things the most strange and adverse to our ordinary senses, as to find them not only deprived of their offensive properties, but positively pleasant. What is true of the physical man is more than true of his mental associations, especially if you call into play some of those controlling faculties, like avarice, ambition, or revenge.

tell you what every boy in your shop knows full well, that seven-tenths of them are mixed and impure? Shall we point out the manner in which the valuable gums are sophisticated or deprived of their proximate principles, and then resold? For what purpose, or to what end shall we do this? It would be a sorry record of disgraceful facts alike damning to the active agent and his knowingly guilty participant. Does any one think it would be a pleasant task for a July day? Let him try the experiment. Let him, for instance, not only make it a matter of personal appeal, but try the power of epistolary harvesting as well. From one he will get a letter that reads thus:

"I can not say that I have any thing to report upon home adulterations, as our druggists are not addicted to such habits." Very good, except that the plea of innocence will not avail against facts. Another says, "I know that adulteration is common, very common; I could point out some examples, such as the mixing of essential oils either with inferior oils, or spirits of turpentine or camphene, and others of this class. These facts are well known to exist, but how can we remedy them?" Another says, "The inferior class of goods sent abroad is of more consequence than the adulterations, and a source of more evil, though adulterations are unquestionably made, and that to a great extent."

You see all admit the evil, and know that it exists; all complain of it, but where is the remedy. A letter from a warm-hearted enthusiastic man, of Worcester, Mass., suggests various remedies, and, as I shall read his paper entire, you can judge of their fitness. They have been discussed before by this Association.

Does it need any argument to prove how easy the task, how rapidly he will accumulate facts?

But, says my smiling drug grinder, or jobber, or retailer of spurious wares, as he hears this sorry confession of impotency,' "You have got no facts to communicate, no data to bring forward, and you deal in mere generalities that cannot be proved." The "wish is father to the thought," and we say it in sorrow that all we have alluded to, and a thousand fold more, has been abundantly proved and can be done again, if any one has the

REPORT ON THE HOME ADULTERATION OF DRUGS.

Your Committee had hoped, up to a late day, that the strong interest manifested in the subject of Home Adulterations, at least by the members of this Association, would have found its appropriate expression in their cordial assistance and aid in furnishing the Committee with such facts and material as should have given them the foundation whereon to have made a report worthy the subject. Such, we come again before you to say, is not the fact.

But having had this matter urged upon us again and again, we can not forbear giving the subject a more mature and philosophical examination before we let it pass. Because we have only the same class of facts to report, because we come before this body of educated and intelligent apothecaries, gathered from so many sections of our country, representing so many interests and feelings, and say to them again what we have said before, that in this our enlightened age and land, this matter of adulteration has become so firmly rooted, so does it permeate all avenues and channels of business and trade, so gigantic are all its hideous proportions that one and all decline the hazard of an encounter; do not, therefore, conclude that there is nothing to be said. We have before reported the common adulterations of daily use, and to which we are all accustomed. Shall we reiterate them? telling you again how much alum you get mixed with your cream of tartar, how much brick dust with carbonate of iron, logwood with pulverized cayenne, saw dust with pulv. jalap, pulv. liquorice root with ipecac, sal nitre with iodide of potassium, mannite with quinine, common clay with blue pill, Banbury rhubarb with true Turkey, or worm eaten half rotten rhubarb ground up with East India, Maracaibo bark with true yellow or pale bark, with the color regulated with yellow ochre, which, by the way, is a common ingredient in pulv. rhubarb. Shall we go over the list of finer chemicals, and show how often their inefficiency in the hands of the medical man is attributable to their imperfect manufacture, for the purpose of cheapening the product? Shall we rehearse again the history of essential oils, and

Ext. Rhei.

℞.—Rhubarb, in moderately fine powder, ℥xij.
Alcohol, sp. gr. ·855, q. s.

Dampen the rhubarb with a small portion of the alcohol by rubbing it in with the hands; transfer to a suitable displacer, and having packed it moderately and otherwise arranged the apparatus, pour on the alcohol, and when f.℥xij. shall have passed, set aside for spontaneous evaporation until reduced one-half. Continue the percolation with the alcohol until the liquid comes away nearly tasteless. Pour the portion last obtained into a porcelain dish arranged in hot water maintained at a temperature not exceeding 160° F., and when evaporated to nearly a syrupy consistence, add the other portion, and continue the evaporation at the same temperature until reduced to the proper consistence. Avoid the use of an iron spatula.

For reasons for proposing the adoption of the above, see Journal and Transactions of the Maryland College of Pharmacy, vol. i. No. 2.

Ext. Rhei Fluid.

℞.—Rhubarb,	℥viii	Each in moderately fine powder, passed through a No. 40 sieve.
Aniseed,		
Fennel, each,	℥j	
Ginger,	℥ij	
Diluted Alcohol, (alcohol 2 parts, water 1 part) q. s.		
Sugar,	℥iij.	

Having mixed the powders, pour on sufficient of the diluted alcohol to dampen them, and transfer immediately to a suitable displacer and pack it with gentle pressure. Having properly arranged the apparatus, pour on the diluted alcohol and continue the percolation until about Oiss. has passed, or the materials are exhausted. Evaporate this in a porcelain dish, arranged in hot water of 160° F. until reduced to f.℥vj., and then add the sugar.

Submitted by
ISRAEL J. GRAHAME.

ficient water to form a smooth paste, the whole to be well mixed and transferred to a water-bath; the resin plaster, previously melted, to be now added, and the whole suffered to remain in the water-bath until all moisture is dissipated.

Emplast. Opii.

℞.—Opium, in powder,	℥ij.
Burgundy Pitch,	℥iij.
Lead Plaster,	℥xij.

Treat the opium, previously mixed with some suitable substance, by displacement with water to exhaustion; evaporate by water-bath to f.℥ij., and add it to the Burgundy pitch and lead plaster previously melted together, and arrange in a water-bath to dissipate all moisture.

Ext. Aconiti.

℞.—Aconite leaves, recently dried, in powder,	℥xij.
Alcohol,	℥xviii.
Diluted Alcohol, q. s.	

Dampen with the alcohol and pack in a suitable displacer, and otherwise arrange for percolation. Pour on the remainder of the alcohol, and when it ceases to drop, pour on diluted alcohol, and when f.℥xviij., or the alcoholic portion, has passed, put it aside for spontaneous evaporation until reduced to f.℥iij. Continue the percolation with diluted alcohol to exhaustion. Evaporate this over hot water maintained at a temperature not exceeding 160° F., until reduced to a syrupy consistence; then reduce the temperature of the hot water to 120° F., and add the alcoholic solution and evaporate to the proper consistence.

Prepare in like manner with the above

Ext. Conii.
Ext. Hyoscyami.
Ext. Belladonnæ.
Ext. Sarsaparillæ.

It is proposed to abandon all the above extracts prepared by inspissation of their expressed juices, and the adoption of these in their stead as more certain and reliable preparations. Special direction to be given to use none other than carefully dried and hermetically sealed herbs.

Rub well together the aloes, myrrh and carb. potassa; add the remaining powders; and mix all intimately. Having mixed the water and comp. tint. cardamon, pour of this liquid on the compound powder, sufficient to dampen it; pack moderately in a suitable displacer; and having placed over the surface a piece of perforated filtering paper, pour on the remainder of the liquid, and when it has ceased to pass, add water sufficient to make the filtrate measure in all f.℥xxiv.

Decoctum Sarsaparillæ Compositus.

℞.—Sarsaparilla, in coarse and uniform powder, .	℥vj.
Bark of Sassafras Root, in moderately fine powder,	℥j.
Guaiacum Wood, rasped, ...	℥j.
Liquorice Root, in moderately fine powder, .	℥j.
Mezereon, sliced, ...	ʒiij.
Water, q. s.	

Mix the powders well together, and, having boiled the mezereon with two pints of the water for fifteen minutes, and allowed to rest until cold, take sufficient of the decoction to dampen the mixed powders; arrange in a suitable displacer, and pour on water until four pints are obtained.

Emp. Ammoniac cum Hydrarg.

The present formula for this plaster is very objectionable. For, independent of the formation of an inert sulphuret of mercury and the unpleasant odor arising from the use of sulphuretted oil, there is nothing in the compound to give it the proper consistence of a plaster. I therefore propose the following:

℞.—Ammoniac, in powder, . . .	℥viij.
Mercury, ...	℥iv.
Resin Plaster, ...	℥v.
Glycerin, ...	f.ʒiij.
Water, q. s.	

Triturate a quarter of the ammoniac with the glycerinand a little water, so as to form a smooth paste; add the mercury, and continue the trituration, adding a little water from time to time as may be necessary, until globules are no longer visible. The remainder of the ammoniac should then be triturated with suf-

Melt together at a moderate temperature the lead plaster, white wax and one half the olive oil; then add the soap previously triturated with the remainder of the oil; stir them well together until nearly cool, and add the peruvian balsam and mix.

The soap is added under the impression of a therapeutical advantage, and at the same time to retain the name of the compound.

Confectio Rosæ.

℞.—Red Roses, in moderately fine powder,	℥iv.
Refined Sugar, in powder,	℥xxx.
Clarified Honey	℥iv.
Alcohol	f.℥viij.
Diluted Alcohol	q. s.
Oil of Roses	♏vj.
Mix.	

Dampen the roses with a portion of the alcohol and pack moderately in a suitable displacer. Having placed over the surface a piece of perforated filtering paper, pour on the remainder of the alcohol, and when the liquid ceases to drop pour on diluted alcohol until f.℥viij. or all the alcoholic solution shall have passed; remove this and put aside for spontaneous evaporation until reduced to f.℥ij; (the latter portion of the evaporation may be conducted over hot water of about 150° F.) continue the percolation with diluted alcohol, until exhausted or about f.℥viij. more pass, which reduce by water bath to f.℥ij; mix this with the previous portion, and add the oil of roses and mix them; triturate this with the sugar; add the honey and beat the whole together until they are thoroughly mixed.

Decoctum Aloes Compositum.

I propose to substitute the term Mistura Aloes Composita, for which I offer the following formula:

℞.—Extract of Liquorice	℥ss.
Liquorice Root, in moderately fine powder,	℥iss.
Carb. Potassa	℥j.
Aloes, Myrrh*, and Saffron, each in moderately fine powder, of each,	℥iss.
Comp. Tinct. Cardam.	f.℥viss.
Distilled Water	f.℥xviij

* The finest pieces of myrrh in lump should be selected.

Ceratum Plumbi Subacetatis.

Soften the simple cerate by means of a water bath, and stir in gradually with a wooden spatula the sol. subacetate of lead; continue the stirring until cool, and lastly add the camphor dissolved in oil, and mix.

Ceratum Sabinæ.

℞.—Lard	℥viiss.
Resin	℥iss.
Yellow Wax	℥iij.
Fluid Ext. Savin (prepared as given below)	f.℥ij.

Melt together the lard, resin and wax, and when cool, having stirred it constantly, add the fluid extract, and continue the stirring to completion.

For the preparation of the fluid extract of savin, the following mode is proposed:

Take of English Savin, in fine powder, prepared from recently dried leaves by contusion	℥iv.
Alcohol, 90 per cent, ...	q. s.

Pour on the savin sufficient alcohol to dampen the powder; pack immediately in a suitable displacer, with considerable pressure, and having placed on the surface a piece of perforated paper, pour on the alcohol, and when f.℥vj. shall have passed, put aside for spontaneous evaporation until reduced to f.℥iij. stirring frequently, meanwhile, to facilitate the process. Continue the addition of the alcohol until f.℥viij. more pass; reduce this by water-bath at a moderate temperature to one fluid ounce, and mix it with the previous f.℥iij.

Ceratum Saponis.

The resulting compound of the present formula for this cerate being an inelegant mixture and about equivalent to lead plaster, combined with a due proportion of olive oil and wax, to give it the requisite consistence, the following formula is proposed:

℞.—Lead Plaster	℥vj.
White Wax	℥iij.
Olive Oil	f.℥x.
White Castile Soap, in *fine powder* . .	℥iiss.
Peruvian Balsam	℥ss.

Mix them in a glass stoppered bottle and let stand one hour; then add distilled water f.ʒiij. Keep the product in a well stopped glass bottle, in a cool and dark place.

The difficulty of properly securing this acid when made with strong acids so as to safely dispense it, on account of the reaction between them, induces the above formula.

Aconitia.

Substitute F. W. Headland's formula, as stated in a note to the tenth edition of the U. S. D.

Ceratum Simplex.

R.—Lard	ʒviij.
White Wax	ʒiv.
Peruvian Balsam	ʒiij.

Melt together the lard and wax, and stir them constantly until nearly cool; then add the Peruvian Balsam and continue the stirring till cool.

The addition of the Bals. Peru is proposed to prevent rancidity.

Ceratum Calaminæ.

R.—Prepared Calamine	ʒiij.
Yellow Wax	ʒiiiss.
Lard	ʒxss.
Olive Oil	f.ʒi.
Peruvian Balsam	f.ʒss.

Melt together the lard and wax, to which, removed from the fire, add the calamine previously triturated with the olive oil, until a perfectly smooth paste is produced; stir them well together, and when nearly cool add the Peruv. Balsam, and continue the stirring to completion.

The reasons for substituting the above for that of the Pharmacopœia are obvious.

Ceratum Plumbi Subacet.

R.—Simple Cerate, (prepared as herein proposed)	ʒxij.
Solution of Subacetate of Lead . .	ʒiiss.
Camphor	ʒss.
Olive Oil	f.ʒss.

Section 10.—*From "Trochisi" to "Zincum" inclusive.*

To the Chairman of the Committee:

The following formulæ are proposed as substitutes for the corresponding ones of the Pharmacopœia.

Acetum Opii, or Black Drop.

℞.—Opium in moderately fine powder . .	℥iv.
Nutmeg in " " " . . .	ʒvj.
Saffron in " " " . . .	ʒij.
Poppy Capsules, or other dividing substance, in moderately fine powder . . .	℥ij.
Glycerin	f.℥iij.
Diluted Acetic Acid	q. s.

Mix the powders intimately, and distribute over the mixture f.℥iss of the diluted acetic acid, and by means of the hands rub it into the powder so as to dampen it uniformly; then pack moderately in a suitable displacer, and having placed over the surface a piece of perforated filtering paper, pour on diluted acetic acid, and when f.℥x. of the liquid shall have passed, put it aside; continue the percolation till the fluid which passes is comparatively free from taste; evaporate this latter portion of liquid in a water bath, to f.℥iv., to which add f.℥ss. of acetic acid, and mix this with the f.℥x. first obtained; then add the glycerin, and filter. The product should measure f.℥xvij.

The advantages resulting from this process consist in the preparation retaining its full aromatic properties, and in the economy of time, it having required a little over two hours from the commencement of the process, to procure the first ten ounces of liquid which contained the bulk of the active portion of the compound, and would require but eight or nine hours to complete it.

The change in strength is proposed, because it is believed that many physicians prescribe it under the impression that it represents three times the quantity of opium that laudanum does; and also because the original black drop was designed to be prepared so as to be of the strength here indicated.

Nitromuriatic Acid.

℞.—Nitric Acid, (sp. gr. 1·42) . . .	f.℥iv.
Muriatic Acid	f.℥viij.

Tincture of Arnica.

Take of Arnica flowers 16 ounces.
Diluted alcohol 8 pints.

Macerate for fourteen days with frequent agitation, then express and filter through paper.

Tincture of Cimicifuga.

Take of Cimcifuga coarsely powdered 16 ounces.
Diluted alcohol 4 pints.

Macerate for fourteen days with frequent agitation, then express and filter through paper.

Tincture of Veratrum Viride.

We adopt the formula of Dr. Norwood, of South Carolina, by adding to eight ounces of the recently dried and coarsely powdered root, sixteen ounces of alcohol; macerate for fourteen days with frequent agitation, then express and filter through paper.

The following tinctures are in frequent demand with us, and are not yet adopted in the U. S. Pharmacopœia, although recognised by other Colleges, as follows:

Tinct. Aurant. by the London, Dublin and Edinburgh Colleges.
" Buchu, " Dublin and Edinburgh Colleges.
" Canab. Ind., by the Dublin College.
" Chiretta, " " "
" Ergot, " " "
" Matico, " " "

Is tincture of musk worthy of a place? It is occasionally directed.

The Pil. Colocynth Comp. is a valuable and popular pill; each of the British Colleges direct a different mode of preparing them; are either worth introducing into the U. S. Pharmacopœia?

The above comprises all that I have to offer at present. Should any thing else occur to my mind, I will communicate, and in the mean time continue respectfully yours,

JOHN MEAKIM.

New York, June 14th, 1858.

of all readily soluble bodies, at least until all can determine upon a uniform standard for them.

In the adoption by one body of a preparation originating with another organised body, the importance of accepting the same name is evident. In violation of this rule, the Linimentum Saponis of the British Colleges is called in the U. S. Pharmacopœia, Tinctura Sapon. Camph. I do not see the necessity for a change, as it is invariably a liniment in its use, and as such might very properly have retained its original title.

Another case in point is the Cerat. Cantharidis of the U. S. Pharmacopœia, although literally correct; it has always been designated by the British Colleges, as Emplast. Canth., and is used in that form, therefore I cannot subscribe to the propriety of the change.

The more serious difficulties, however, consist in having preparations bearing the same name, yet so widely differing in composition and effect as to endanger life by the substitution of one for the other. It is of course well understood, that one country or climate may need combinations not required by another, and such do not require mutual adoption, alike in name, and to that end I suggest that we propose to the Association the practicability of a correspondence with other medical and pharmaceutical bodies of our own country, Great Britain, and other countries, as far as may be expedient, to invite discussion, compare views, and if possible to fraternize under the spreading leaves of one general Pharmacopœia.

As we cannot confer on this subject face to face, I have thrown out these rambling ideas for your better arrangement, if they are worthy of your concurrence, and will proceed to the more practicable duty of the department allotted to me. Many tinctures now in use, are, I think, destined to be superseded by the more recently introduced preparations in the form of fluid extracts, and which have advantages in concentration, and in the absence or diminished amount of spirit they contain; I may cite those of senna and rhubarb as present instances, that will strike the mind of every pharmaceutist.

The following tinctures are often prescribed in our vicinity, and are without officinal formula. We prepare them as follows:

and Bache, is the variety of pharmaceutical preparations in use, stamped with our own, and the authorities of Great Britain, differing in composition, but bearing the same name, and also with those identical in composition, distinguished by a variety of titles. The idea occurs to me, that with the present facilities for frequent communication with our trans-atlantic brethren, we might meet in a common centre, and determine for each preparation of mutual adoption, a definite name that would be recognised wherever our language is spoken.

It may be said that our appointment as members of this Committee did not contemplate these considerations; but the interests of our profession, and our duties to society, claim the efforts of every member of our Association in exerting his influence to bring order from this chaos. Let us then, as a committee, enter the wedge, and by repeated and well directed blows, open the question, and invite its discussion to a successful termination.

When we consider the non-conformity to any one standard, by the three prominent Colleges under the same general government, any attempt at harmony might appear to be a useless task; but as new lights are dawning, and we begin to recognise each other as members of one great family, having interests in common, differences vanish in the laudable desire to effect the greatest good to all,

In our zeal to establish a general accordance in pharmacy, care is necessary not to overdo, but rather to systematise what has been done, and to rescind as far as practicable what appears to be superfluous; leaving to extemporaneous prescription all that can be readily prepared, and that may be better proportioned to suit each individual case. Take, for example, the Linimentum Opii of the British Colleges, which is prepared by adding Tinct. Opii to Linim. Saponis. In my view of the case, their combination and proportions are better left to the judgment of the physician. A more glaring objection consists in the solutions and syrups of morphine, adopted by the British Colleges, and differing in strength. Again, the morphine solution of the U. S. Pharmacopœia is prepared in the proportion of one grain to the ounce, and is often confounded with that of Majendie, which is sixteen times the strength; these serve to illustrate the advantage of leaving to extemporaneous prescription the solution

much better preparation can be made by the London than the U. S. process. By the London process, cold water is the menstruum used; the U. S., warm water. The pods of the Cassia fistula contain a large quantity of tannin, which will not be taken up to so great an extent by cold as by warm water, while tannin present in the pulp may in some degree modify the laxative properties of the preparation.

Pulpa Tamarindi.—Do not like the U. S. or the London process, think that a better process would be to cover the tamarinds with cold water, and digest for 24 hours, occasionally stirring the same, then strain off the liquor and press the tamarinds in a coarse canvass, let the liquor stand a few hours to settle any impurity, and then evaporate by a water bath to a proper consistency.

There is to be found in the German Pharmacopœia several preparations under the head of *Robs*, that might be mentioned here under the head of Pulpæ, and might with some advantage be added to them; for instance, Rob. Juniperi, made by macerating the fruit of juniper with water, straining to separate the seeds, &c., and evaporating to a proper consistency. The diuretic properties of the juniper can be administered in this form very conveniently; and would form a vehicle for the administration of other more active diuretics.

Rob. Sambuci is another very pleasant preparation, diaphoretic in its properties, and much used by the Germans. It is made by expressing the juice from ripe berries, and evaporating to a proper consistency. This is an excellent vehicle for the administration of more active remedies, being pleasant to the taste, with the peculiar flavor of the berry.

Section 9.—Tincturæ.

To the Chairman of the Committee:—

Dear Sir,—As a member of the Committee on the Revision of the Pharmacopœia, I will proceed to give you the result of my reflections on the subject; and the first point that arrests my attention in reviewing the valuable compilation of Drs. Wood

Take of Hypophos. Lime . . 6 oz.
Gran. Carb. Potass. . . 5¾ oz.

Dissolve the Hypophos. Lime in four pints of water, and the Carb. Potassa in half a pint of water, mix the solutions, pour on a filter, wash the Carb. of Lime formed, evaporate to dryness, stirring constantly in the latter part of the evaporation so as to granulate it.

Hypophosp. Potass. may also be made by taking a solution of Caust. Potass., boiling with phosphorus until perfectly oxidized and combined. Made in this way it requires long boiling and an excess of phosphorus, or it will be liable to contain an excess of alkali. To obtain a pure Hypophosphite it should be dissolved in alcohol of ordinary strength, filtered and evaporated, stirring as before to granulate it.

Potassa.—Potassa Acetas.—The process of the U. S. Pharmacopœia is objectionable, and in the hands of one of little experience would be very apt to contain potassa in excess. The saturating of acetic acid with a carbonated alkali, every one who has had any experience will admit, is a very troublesome experiment, and always unsatisfactory.

The process of the Dublin Pharm. is much better than that of the U. S. P., using acid of a given strength, and Carb. Potass. equivalent to the acid. The acid ordered has a sp. gr. 1·044, containing 33 per cent. of real acid, consequently the quantity of alkali necessary to saturate is easily calculated. Then boil to expel the carbonic acid, and, if necessary, add a small amount of acetic acid. The Dublin process would, taking all things into consideration, be most likely to give a satisfactory product.

Potassæ Bi-Carb.—The U. S. P. process is objectionable, the amount of water is too large, requiring the solution to be evaporated at a low temperature, both difficult and tedious, and if suffered to become heated beyond the point, 160° loss of carbonic acid results. The Dublin process is much better. The best process would be to use a saturated solution of carb. potassa, and pass carbonic acid into it until saturated; a large amount of bi-carbonate would crystallize out by this process.

Pulpa.—Do not think any special change can be made. In some of them, I think, the manipulation might be modified with advantage, for instance, Pulpæ, Cassia fistulæ. Think that a

pensatory contains nearly all that can be said; but after all, experience will best teach the pharmaceutist the nature of the substance to be used, according to the quantity and the ingredients composing the pill, with the particular manipulation.

I would suggest soft manna as an excipient, in most of the pills where conserve of roses is directed to be used. Conserve of roses often contains a large quantity of tannin, and is objectionable in pills containing sulph. iron, acet. lead, or other substances with which it is incompatible. Manna is an excellent excipient for sulph. quinine, and such medicines as are difficult to make into a plastic mass.

In making pill mass in small quantities, I would recommend its being done on a pill tile instead of in a mortar; it will be found more expeditious, and not the same loss as when a mortar is used.

As to rendering pills less objectionable, the French pharmaceutists have taken the lead, and but little or no improvement can be offered to their preparations introduced here. The largely increased size of sugar-coated pills is an objection; and the question arises, does not the coating of pills containing such substances as are easily decomposed by heat, to a certain extent injure their active properties?

The formula for pills of iodide of iron in the Pharm. is very objectionable, and but seldom used. One of the formulæ mentioned in the Dispensatory under Syr. Iod. Iron is preferable.

I have no local formula for pills that would be desirable as an addition to the Pharmacopœia list.

Plumbum.—Have no suggestions to make in the lead preparations, or any additional preparation to add.

Potassæ Citras.—No direction is given as to the degree of heat to be used in the evaporation; water-bath should be used, as any excess of heat would decompose the acid, and produce a more or less colored product.

Potassæ Hypophosphas.—This preparation, recently introduced by Dr. Churchill in tubercular diseases, may be prepared by double decomposition, between Hypophosphite of Lime, and granulated Carb. Potassa.

is changed into a mixture of officinal syrups to save trouble in making it, but is exactly the same strength.

Syrup of Lobelia.

Take of Lobelia Inflat. in coarse powder	.	℥iv.
Sugar	.	lb. iiss.
Acet. Acid	.	℥ij.
Dil. Alcohol	.	Oij. Mix.

Mix the Acetic Acid and diluted Alcohol, macerate the Lobelia in it for twelve hours, displace, adding water till thirty-four fluid-ounces have been obtained, evaporate to one pint, add the sugar and form a syrup.

Tinct. of Arnica.

Take of Arnica Flowers in coarse powder	.	℥ij.
Diluted Alcohol	.	Oij. Mix.

This tincture is more extensively used with us than any other,

Tinct. Polygonum Hydropiper.

Take of Polygonum Hydrop. in coarse powder		℥ij.
Dil. Alcohol	.	Oj. Mix.

Macerate the usual length of time for tinctures, or displace. Used in Amenorrhœa.

Elixir of Opium.

This preparation is much needed. McMunn's Elixir is largely used, but a reliable formula introduced into the Pharmacopœia would almost entirely supercede it.

Pills.—To define the peculiar composition of a pill is not within the province of the pharmaceutist, save where by the use of a peculiar excipient the mass may be made in pilular form, or where by the use of incompatibles decomposition may ensue, not intended or required by the physician. Such being the case, it is the duty of the pharmaceutist to make and not prescribe. I have understood it to be my task to make investigations as to the best manner in which they can be made, and rendered less objectionable to those who are obliged to use remedies in this form.

In regard to excipients, the last edition of the U. S. Dis-

your work, but trust you will accept it for what it is worth, and should it be of any value to you at all, I shall feel amply compensated for the time employed.

Yours truly, FREDERICK STEARNS.

Section 7. From "Pilulæ" to "Pulpæ."

To the Chairman of the Committee:

Having been appointed one of the committee on the preliminary revision of the Pharmacopœa, and special portions being attached to each, I shall offer but a few suggestions apart from my allotted portion, and those confined principally to my own locality.

It may be proper to say I sent out a large number of circulars to Pharmaceutists in the Western States, requesting those who had suggestions to make or additions to offer to report them, but there has not been a response to one.

In the preparations of the Pharmacopœia, I would suggest giving the proportions in parts instead of specifying the quantities of each; it would simplify the calculation for small or large quantities, and the quantity of product in chemical preparations would be a desirable addition.

In local preparations, which are very extensively prescribed, I will name,

Syrup of Sulph. Morphia.

Take of	Sulph. Morphia . .	gr. i.
	Simple Syrup . . .	f℥i.

Mix.

Syrup Morphia Comp., or Jackson's Cough Syrup.

Take of	Mur. Morphia . . .	gr. xv.
	Syrup Senega . . .	℥v.
	" Ipecac. . . .	℥iiss.
	" Rhubarb . . .	℥v.
	" Simple . . .	℥xix.
	Oil Sassafras	gtt. xxx.

Mix.

This is a very popular preparation with physicians and the public, and will be found in the local formula presented by W. B. Chapman. This

Ferrum Ammoniatum.—I suggest the removal of this salt from the list of preparations, to be dropped entirely, or else inserted in the secondary list of Materia Medica. Its little use and uncertain value will, I believe, warrant this disposition of it.

There are perhaps a few new preparations of iron which are now extensively employed in medicine, and which may be thought worthy of admission into our Pharmacopœia.

Ferri et Quiniæ Citras.—See process of Dr. Squibb, Am. Jour. Pharm. vol. 27, p. 294.

Pilulæ Ferri Iodidi.—See formula of Blanchard and others, Am. Jour. Pharm. vols. 25 and 29, as worthy comments upon the officinal process.

Liquor Ferri Persulphas.—As per process of Procter, mentioned in my remarks relating to *Ferri Oxidum Hydratum.* See Am. Jour. Pharm. vol. 25, p. 104.

Ferri Lactas.

Ferri Valerianas.—Both the last are now much employed, processes for making them are found in most of our Chemical and Pharmaceutical works.

In conclusion, I would express my regrets that imperative business duties, sickness in my family, and other unavoidable causes, have prevented the possibility of my giving the other divisions even a cursory reading, with the view of comment. I only remark, *én passant*, that in the formula for *Mucilago Acaciæ*, the first line should read, instead of "take of gum arabic, in powder, four ounces," as follows: take of selected gum arabic four ounces—for the following reasons:

In powdering gum arabic, the impurities are also reduced to a *fine* state of division, and contaminate the mucilage, and render it liable to change in spite of the most careful straining; but if select pieces are employed and the solution made by trituration, these impurities remaining in their natural size are readily separated, and thus the transparency and permanence of the preparation is insured.

This is perhaps trivial, but you know a due appreciation of a sort of pharmaceutical æsthetics must play no small part in our endeavors to progress.

The foregoing, sir, is all I have to offer you at present. I am well satisfied of the incompleteness of my labor in aid of

Ferri Pulvis.—Most pharmaceutists who have had to employ much of this new officinal in dispensing, have doubtless noted the great difference often occurring in that obtained from different makers, and even in different lots from the same maker. The dark *iron gray powder*, I have been myself best satisfied with, is the product of a foreign laboratory.

Prof. Procter, who has had considerable experience in manufacturing the preparation, gives in a paper in the Am. Jour. Pharm. vol. 26, p. 217, the reasons and causes of the differences above noted; and points out the precaution necessary to insure a good product. A condensed synopsis of these precautions, it is suggested, should be appended to the process in the Pharmacopœia. From the expense of the necessary apparatus to conduct the manufacture of this powder, it is probable that its preparation will always be confined to our large laboratories, and it will become them to employ more care in its manufacture in order that it may compete in purity with that from foreign makers. A note in the Am. Jour. Pharm. vol. 29, p. 310, gives a process for preparing powder of iron by igniting protoxide of iron, anhydrous ferrocyanide of potassium and carbonate of potassa. Of the merits of this process I am unable to speak.

Ferri Subcarbonas.—It is ascertained that the salt is allotropic, and if, in the course of preparing it, it be washed with *hot* water or dried above a gentle heat, it assumes a condition unfavorable to solution; it is therefore suggested, that in the officinal process the word *cold* be substituted for *hot*, or that the latter word be erased altogether, in that part relating to the washing of the precipitate; and that in place of "a gentle heat," the words "at a temperature not exceeding 100° F." be inserted.

Ferri Sulphas.—I do not see the policy of retaining this salt among the preparations, as it is manufactured in the pure form in our large laboratories on so large a scale and at so much less cost than the small dealer can possibly make it, that it is now never I believe made by them. I may remark that a reason of this is, the pure form of sulphate of iron having come very largely into use in the photographic art during the past few years.

I therefore suggest that it be removed from under the title of *Ferri Sulphas purum*, to the primary list of the Materia Medica.

ing it, (before it is added to the sugar) and by boiling it in small vials of opaque glass with accurately ground stoppers, filling each up full and then forcing in the stopper by a speedy movement so as to entirely exclude the air, that by these means the officinal solution will keep very well. The vials should not be larger than one ounce, for this quantity can be used up by the patient before any important change takes place.

Liquor Ferri Nitratis.—This truly valuable preparation introduced into the Pharmacopœia (with the process of Prof. Procter) of 1850, has but one objection, and that a serious one, i. e. want of stability, which, however, the learned Professor has happily overcome in an improved process which he published in the Am. Jour. Phar. vol. 29, p. 306.

Ferri Oxidum Hydratum.—In view of the necessity of preparing this *antidote*, always extemporaneously, and with the greatest despatch to insure its value, I would suggest that the *Liquor Ferri Persulphatis* of Prof. Procter be made officinal, and that the process given for preparing the hydrated oxide, in the present Pharmacopœia be so changed, as to direct a given quantity of the prepared solution of Persulphate of Iron to be precipitated, as directed in Prof. Procter's paper, Am. Jour. Pharm. vol. 25, p. 105.

I deem the recognition of this solution of the persulphate of iron will induce pharmaceutists to keep it ready prepared, and thus by rendering the process of preparing the hydrate quick and easy will conduce to its efficiency as an antidote.

Ferri Phosphas.—I am aware of no improvement in the process of preparing this salt. It is believed, however, that the phosphate of some of the earthy and alkaline bases are more readily absorbed in the economy when given in a nascent condition or in a state of solution. The above phosphate is no exception to this rule, and doubtless much of its value is lost as a medicine from its insolubility in the gastric fluid, when employed in its ordinary condition. This difficulty suggests the employment of a simple or compound syrup, or other solution of it, a formula for which might with propriety be recognised, now that the study of the elegibility of solutions of the salts of the oxide of phosphorus has been so extended among pharmaceutists.

A late communication upon this preparation by E. R. Squibb, (Am. Journ. Pharm., vol. 29th, p. 289), after commenting upon the present process, (officinal), proposes a method which furnishes a permanent and uniform solution, and is recommended to the attention of the revising Committee.

Ferri Citras.—It is recommended to make the Ferri Ammonio-citras, Lond. Ph., officinal in place of the Ferri Citras, U. S. P., for the reasons of its being much more soluble in cold water, and of its having a neutral in place of an acid reaction. I am aware of no essential improvements having been made in the preparation of this salt since the last revision of the Pharmacopœia. The English manufacturers take especial pains to have citrate of iron in very thin laminæ, which gives to it the advantage of dissolving almost instantly, when thrown into cold water.

Ferri et Potassæ Tartras, Ferri Ferro-Cyanuretum, and *Ferri Iodidum.*—I have no comments to offer upon.

Liquor Ferri Iodidi.—The serious difficulties attending the endeavors to preserve this solution from changes, lead us to desire to modify and improve the process so that they may be avoided. Some pharmaceutists recommend the addition of more sugar, or its substitution entirely by glycerin, and the exposure of it, when made, to light, to preserve its transparancy.

It is questionable in my mind, however, whether the exposure of this easily decomposed solution to the direct action of such strong decomposing agencies, as solar light and heat, does not produce precisely the contrary effect to that which it is intended to produce; *i. e.*, does not the oxygen of the air form iodic acid with free iodine of the solution when thus exposed, and this re-dissolve the separated oxide of iron, thus preserving the liquor colorless?

Blanchard of Paris prepares a syrup of iodide of iron, which does not change on exposure; his process has not been published in this country that I am aware. Messrs. Wood and Bache suggest the employment of more sugar. If glycerine be employed, care should be given to ascertain that it is free from acid reaction before it is used.

I have found in my own laboratory that by using care not to expose the solution to the air any more than possible while filter-

Which are now all largely represented by unofficinal fluid extracts.

It will be readily seen that one member of this committee could do but a small portion of the necessary labor required in perfecting a list of fluid extracts, formulæ, processes, etc., within the limited time allowed, even had he abundant skill and leisure; therefore, I have confined myself to suggestions calculated to call the attention of the next Committee to the importance of this new department of Pharmacy, and what will be expected in our next standard, with the belief that the attention and skill of that Committee will enable them to elaborate a sufficient number of formulæ worthy of admission at the ensuing revision, which will, in a measure, meet the wants now felt by the medical community in this respect.

I would suggest, in conclusion, that the attention of the many intelligent investigators in Pharmacy in our country, be invited to a thorough study of each element of the Materia Medica, which it is professed to represent in a fluid extract, to ascertain the methods best adapted to produce the results we seek. There is still abundance of time before May, 1860, to allow those who may be interested in these desirable investigations, to aid us by their efforts, and I think there is now no field in practical pharmacy which can be occupied by careful students, with greater chance of usefulness than this.

In regard to *Ferrum;* its officinal preparations.

Tinctura Ferri Chloridi.—There is much complaint among inexperienced pharmaceutists, in regard to the difficulty they find in preparing this tincture satisfactorily, due to want of strength in the commercial hydrochloric acid, and to the fact of the subcarbonate of iron being allotropic, and being found in commerce usually in the condition least favorable to its solution in the prescribed quantity of acid, even if the latter be of the officinal strength.

The difficulty in relation to the deficient strength of the acid, is commented upon by Mr. Sharp, (Am. Journ. Pharm., vol. 27th, p. 103.) Also, by Prof. Procter, Mr. Caldwell, (ib. vol. 27th, p. 212), and Mr. Thompson, (ib. vol. 29th, p. 299). These gentlemen propose various methods by which to obviate this difficulty, which, however, are all open to objection.

of spigelia and senna. The following compounds are now much employed, for a portion of which processes are published:

Ext. Buchu Fl. Comp.—Vide Parrish, Pr. Ph., p. 173.
" *Cinchonæ Compos.*—Representing the Comp. Tinct.
" *Prun. Virg. Compos.* } Am. Journ. Ph., vol. 26, intended
" *Gentianæ Compos.* } to replace the Comp. Tincture.
" *Rhei et Sennæ*—Am. Journ. Ph., vol. 25, p. 23.
" *Sarsap. Compos.*—Sarsaparilla, U. S. P. Officinal.
" *Sarsæ et Taraxaci,*
" *Sennæ et Taraxaci,*
" *Sennæ et Jalapæ,* } U. S. E. D., p. 1082.
" *Scillæ Compos.*

Another argument in favor of fluid extracts is, that such is their concentration, that when it is desirable infusions, decoctions, tinctures or syrups, can be prepared from them at a moment's notice and with little trouble.

The following are recommended by your correspondent to be changed from the secondary list into the primary one, on account of the value attached to the use of them as remedial agents throughout a large portion of our Union—evidences of which appear abundantly on record in our periodical medical literature of the last ten years:

*Aletris,
*Apocynum Androsæmifolium,
*Apocynum Cannabinum,
*Arnica,
*Asclepias Tuberosa,
Dracontium,
Inula,
Lappa,
*Marrubinum;
*Pareira,
Phytolaccæ Radix,
*Rubus Villosus,
*Rumex Brittanica,
*Rumex Obtusifolia,
*Spiræa,
*Toxicodendron,
*Xanthoxylum.

For reasons similar to those expressed in relation to the last list, the following are recommended, as worthy to be added to the secondary list:

Cypripedium,
Leptandra,
Chelidonium,
Matico,
Scutellaria,
Polygonium,
Sanicio,
Hydrangea.

* Unofficinal fluid extract of these are now in use. A process for Arnica is to be found in Am. Journ. Ph., 1857; for Xanthoxylum, in U. S. E. D. p. 1086; for Marrubium, in Proceed. Am. Phar. Assoc., 1857, p. 57.

(*y*) Am. Jour. Pharm., Prof. Procter's process.
(*z*) Merril's process, U. S. Ec. Disp., p. 1084.
(*aa*) Parrish's Pract. Pharm., pp. 177-8-9.
(*bb*) Maisch, Am. Journ. Pharm., vol. xxix. p. 301.
(*cc*) Officinal, U. S. P. See remarks of Roberts, Am. Jour. Pharm., vol. xxix. p. 276.
(*dd*) Parrish's Pract. Pharm., p. 180.

The above list is from our Materia Medica. Some of the items (* in notes) have no officinal preparations, their use being left to the discretion or limited knowledge of pharmacy which practitioners usually possess. I think it becomes us to substitute fluid extracts for a large portion of the tinctures, infusions, decoctions, etc., in which forms they are now chiefly employed.

The need of concentrated fluid preparations has created a demand for them; and enterprising, and it is to be hoped honest and scientific manufacturing pharmaceutists have supplied this demand to a great extent, and our retailers and dispensary shops all over the Union are stocked with the products of these manufactures. In the face of this evident need of standards, by which all may understand how they are made, I think it is self-evident, that those to whom the final revision of the Pharmacopœia is entrusted, should pay special attention to this branch of preparations, and recognize and admit as many processes as the limited time for investigation and test will warrant them in doing. Improvements upon those admitted, if they can be made during the next decade, will be evidenced in the revision of 1870.

Messrs. Henry Thayer and Henry Tilden, both largely engaged in the manufacture of fluid extracts by processes and formula of which most are unpublished, although not withheld from the professional public, have kindly promised to give the results of their experience and skill to the benefit of the Committee of Revision.

Should the reports of these gentlemen reach me in time for the ensuing meeting, I shall present them; and I am assured they will contain much matter of interest and value in relation to this subject.

There are, among the officinal fluid extracts, one compound

equal facility, apply to the other narcotic plants, Aconiti, Belladonnæ, Digitalis, Conii and Stramonii folia, except that I would propose, in case fresh plants were employed, the weight of them should correspond for a given bulk of extract or to the amount of the same plant which would be found necessary to insure a nearly saturated extract.

(*b*) I propose the transfer from "Tincturæ" that one entitled Tinct. Aconiti Radix, to the "Extracta Fluida."

(*c*) In the Am. Jour. Pharm., vol. xxix. p. 111, is a process for this extract by Procter; also in the U. S. Eclectic Disp., p. 1070, is one by Merril.

(*d*) Parrish's Pract. Pharm., pp. 172–3, gives the processes of Procter, Weaver and Parrish. In the Am. Jour. Pharm., vol. xxvi. p. 486, is a process of Rittenhouse.

(*e*) Mr. Maisch's remarks upon this article, Proc. Am. Pharm. Assoc., 1857, p. 160.

(*f*) Am. Jour. Phar., vol. xxvi. p. 107, remarks of Procter; also ibid, vol. xxvii. p. 515, formula of Leamy.

(*g*) Parrish's Pract. Phar., p. 170, several processes are given; also, Am. Jour. Pharm., vol. xxx. p. 17, remarks of Thayer.

(*h*) Proceed. Am. Pharm. Assoc., 1857, p. 159, paper of Maisch's; also a process of Merril, U. S. Eclect. Disp., p. 1072.

(*i*) Officinal U. S. P.

(*j*) See remarks of Maisch in Proceed. Amer. Pharm. Assoc. 1857, p. 159.

(*k*) Baker's process Am. Pharm. Journ. Pharm., vol. xxvii. p. 303; ibid. vol. xxviii. p. 519; ibid. vol. xxx. p. 17, remarks of Thayer; also, Proceed. Am. Ph. Assoc., 1857, p. 67, report of Procter.

(*l*) Vol. xxvi. Am, Jour. Pharm. process of Prof. Procter.

(*m*) Process as laid down in Am. Jour. Pharm., vol. xxv. p. 410; also, Griffith's Univ. Formulæ, p. 281; Proceed. Amer. Pharm. Assoc., 1857, p. 57.

(*n*) Vide Proceed. Am. Pharm. Assoc., 1857, p. 97; also, Griffith's Univ. Formula, p. 403, Laidley.

(*o*) Formula of Prof. Procter, Am. Jour. Pharm., vol. xxix. p. 108.

(*p*) Formula of Prof. Procter, Am. Journ. Pharm., vol. xxiv. p. 207.

(*q*) Formula of Prof. Procter, Am. Journ. Pharm., vol. xxix.

(*r*) Officinal, U. S. P.

(*s*) Am. Journ. Pharm., vol. xxviii. pp. 21 and 107.

(*t*) Officinal, U. S. P.

(*u*) Campbell's process, Am. Jour. Pharm., vol. xxx. p. 221.

(*v*) Officinal, U. S. P.

(*w*) Officinal, U. S. P. Vide also, remarks of Thayer, Am. Journ. Pharm., vol. xxix. p. 102.

(*x*) Savery in Am. Journ. Pharm., vol. xxiii. p. 119; also, Taylor, ibid, vol. xxv. p. 206.

The following is a list of those items of the Materia Medica of which we need concentrated fluid preparations.

Aconiti Folia, (*a*)
Aconiti Radix, (*b*)
Angustura,
Anthemis, (*c*)
Armoracia,
Aurantii Cortex,
Belladonna, (*a*)
Buchu, (*d*)
*Calamus, (*e*)
Canella,
Capsicum,
Cascarilla,
Chimaphilla,
*Cimicifuga, (*f*)
Cinchona,
Cinchona Flava, (*g*)
Cinchona Pallida, (*g*)
Cinchona Rubra, (*g*)
Colchici Radix,
Colchici Semen,
Colocynthis,
Colomba,
Conii Folia, (*a*)
Cornus Florida, (*h*)
Cubeba, (*i*)
Digitalis, (*a*)
Dulcamara, (*j*)
Ergota, (*k*)
Eupatorium,
Galla, (*dd*)
Gaultheria,
Gentiana, (*l*)
*Geranium,
*Gillenia,
Hæmatoxylon,
Helleborus,
Humulus,
Hyoscyami Folia, (*m* and *a*)
Ipecacuanha, (*n*)
Jalapa,
Juglans, (*o*)
Krameria,
Lobelia, (*p*)
Lupulina, (*q*)
Mezereum,
Nux Vomica,
Opium,
Piper, (*r*)
Podophyllum,
Prunus Virginiana, (*s*)
Quassia,
Quercus Alba,
Quercus Tinctoria,
Rheum, (*t*)
Sanguinaria, (*u*)
Sarsaparilla, (*v*)
Scilla,
Senega,
Senna, (*w*)
Serpentaria, (*x*)
Spigelia, (*y*)
*Statice,
*Stillingia, (*z*)
Stramonii Folia, (*a*)
Tabacum,
Taraxacum, (*aa*)
Uva Ursi, (*bb*)
Valeriana, (*cc*)
Veratrum Album,
*Veratrum Viride,
Zingiber.

(*a*) Stearns proposes a process (in the Proceedings of Am. Pharm. Ass., 1857, p. 123,) for a fluid extract of Hyoscyamus which will, with

*Although these are in our list of materia medica, there are no officinal *preparations* of them.

bly) obviated by some free vegetable acid, or at least some spicy correction.

There are other considerations to which it would be necessary to pay attention in perfecting fluid extracts; such as skill and care in manipulations, the employment of special apparatus devised for the purpose; the employment of pressure in forcing the menstrua through the material to ensure more readily its exhaustion, the use of the vacuum pan, whereby the least possible elevation of temperature necessary in inspissating the diluted solutions is employed.

In view of all the above, which appear to me as necessary qualifications and conditions in order to perfect this series of preparations, it may be argued that in the present state of pharmaceutical science, it will be impossible to add many or even any, to the list of officinal fluid extracts. Even allowing this to be the case, it does not follow but that we may accept, for the next ten years at least, some of the processes already proposed and published in our pharmaceutical periodicals and books, those of ascertained scientific merit. I therefore give you below a list of those elements of our present Materia Medica, fluid extracts of which I deem would form one of the most desirable and convenient forms in which to effect their administration.

And first, I would object to the classifying these preparations under different heads, even if they can be naturally subdivided into Concentrated Syrups, Concentrated Tinctures and Oleo Resins, for the reason that the generic title of Fluid Extracts will convey to the mind of the prescriber, in the simplest and most unmistakable manner, the idea of a *concentrated fluid preparation*, no matter what its method of preparation or its menstruum may be.

In our Pharmacopœia there appear seven fluid extracts, two of which, those of cubebs and pepper, are but little used; the first on account of its great cost, the last from its unimportance. An objection seems to be well founded in the present process for the fluid ext. senna, it having been ascertained that maceration and displacement of this drug with cold water only dissolves the the cathartic principle, and leaves the inspissated filtrate less liable to gripe the patient. (Vide comments below.)

material it may be necessary to employ to form such a solution. It is known that the per-centage of extractive and active matter in a medicinal plant greatly vary, in the product of different years, and from difference in position, climate, and from other causes; so that an arbitrary standard in which a certain amount of crude material is made to form a different bulk of extract, though at first sight apparently a good one, is obnoxious to the above serious objection. By *nearly* saturated solutions, I mean they should each contain a certain and definite proportion of menstruum, or vehicle, over and above that necessary for their preservation and solution, in order to allow of the fluid extract to be exposed to the ordinary changes of temperature to which they are inevitably exposed when thrown into commerce, without risk of depositing a portion of the matter held in solution, and moreover to allow a margin for spontaneous evaporation of the volatile menstruum mostly employed. There is no objection, that I am aware of, to having this excess of solvent or preservative fixed according to an arbitrary rule.

III. By careful study and investigation of the characteristics and composition of each plant proposed to be exhibited in the form of a fluid extract, such menstruum be employed, whether alcoholic, watery, hydro-alcoholic, etherine, saccharine, or of other composition, as will best extract the active matters, hold the same in solution, and at the same time reject the inert portions, such as starch, albumen, gum, wax, etc. I think processes, wherever possible should be simplified, although complexity is not a serious objection, if in such process the primary object is effected.

IV. For the purpose of avoiding in fluid extracts the presence of stimulating material in excess, like alcohol, ether, etc., which tend in a great measure to modify and counteract the remedial action of certain medicines, especially of anodynes, sedatives, tonics, etc., I deem it desirable, when in such preparations the preservative and solvent powers of saccharine matter in combination with water are ascertained to be equal, or nearly so, to the same power of the former, that the latter should have the preference; for aside from its preservative power, sugar is always more acceptable to the palate of the fastidious patient; the cloying effect upon some, of syrups, may doubtless be (unobjectiona-

pharmaceutists as most eligibly exhibited in this form, should be added to the list. Their greater convenience in form over that of the solid extracts in all extemporaneous preparations, except pills and powders, is one of their strongest recommendations.

They being nearly saturated preparations of the extractive and active matters, without the inert ones, which dispose them to ferment and change, is another advantage, enabling the prescriber to give a maximum dose of the plant in a moderately small bulk.

The absence of starch, albumen, gluten, wax, chlorophyll, and of other inert matter, allows of less alcoholic or stimulating menstruums being employed, or of bringing more directly into play, as a preservative, saccharine matter, which serves the double purpose of preserving them and rendering them palatable.

I think that the genius of progress in our art requires that the unnecessary bulk of infusions, the uncertainty of decoctions, the unavoidable excess of stimulation accompanying the use and modifying the therapeutical action of many tinctures, be avoided by the admission into our standard gradually, (as fast as deliberate investigation of each one's merits will allow,) fluid preparations under the generic title of FLUID EXTRACTS, which shall possess the following qualifications, which your correspondent deems necessary to the formation of a *perfect* fluid extract.

I. Representing the plant from which it is obtained by retaining *all the active medicinal matter*, whether it be extractive, alkaloid, acid, volatile oil, resin, or portions of all, and in a state or combination as little distinct from that in which they naturally exist in the crude material as possible, so that the therapeutical effect shall be precisely similar to that of the crude material, unless it be found by experience that certain *isolated* principles act better as medicants than when in their natural state of combination in the crude material; it is of course understood that, by repeated analyses of most of the important members of our materia medica, it has been shown in which one or more of its constituents resides its active principles.

II. Fluid extracts should be *nearly saturated solutions* of these active matters, without reference to the quantity of crude

Section 4. From "Extracta Fluida" to "Ferrum" inclusive.

DETROIT, MAY 18th, 1858.

To the Chairman of the Committee :—

Dear Sir,—Agreeably to your desire expressed in the circular sent me in November last, I now transmit to you for consideration such remarks as a necessarily insufficient consideration of the division of the Pharmacopœia assigned to me, on my own part, leads me to suggest. I have to regret that the numerous duties I assumed at our last meeting have not allowed me to devote to this matter of the "Revision" the careful study I wished, and that is imperative almost to all who take upon themselves the responsibility of membership of such a Committee. Yet as I feel that this Committee cannot do much more than *offer suggestions* to a succeeding Committee, and point out such changes, improvements and facts as it deems are worthy of investigation by that Committee, I venture to offer the following without more preface.

As you are aware, I issued a circular letter in November last, copies of which were addressed to the Pharmaceutists of the north-western portion of my district; this circular called the attention of those receiving it to the labors of our Committee and desired their aid in compiling a report.

To those which I sent, it is mortifying to confess that as yet I have not received a single reply.

If the experience of the rest of this Committee is similar to mine in endeavoring to elicit information and assistance in aid of our work, it is discouraging, and the work will fall wholly upon its shoulders without aid or encouragement from the profession at large.

Extracta Fluida—Fluid Extracts.

This class of preparations, for the first time admitted in our Pharmacopœia, in 1850, have since, from their peculiar and acknowledged advantages over many other forms of administration, greatly increased in number and in therapeutical use. And it seems consistent that the names and formulæ for others, from such members of the list of materia medica as are considered by

Simple syrup, and most of the officinal syrups, when made as heavy as directed, crystallize. I think it a good rule to make syrups with a quantity of sugar, a little less than is sufficient to saturate the liquids, and then to drop into the bottle containing them a few lumps of pure sugar, and then occasionally agitate the syrup for a few days. In this way both crystallization and fermentation are in a measure prevented.

Syrupus Ipecacuanhæ.—This is almost inert, as made by the formula. I think the evaporation is carried too far. No doubt a better formula ought to be introduced.

Syrup of Tolu and Syrup of Orange Peel.—I think that a good syrup can be made in each of these cases by simply mixing the respective tinctures with simple syrup, such is the common method *so far as I know.*

Tinct. Capsici.—There should be some particular variety of capsicum made officinal. Great variation in strength now prevails.

Tinct. Cantharides.—I have found this tincture to lose its strength almost entirely by age. Many of the tinctures and wines are not as permanent and uniform as many suppose them to be. Wine of ipecac. even when excluded from light and air deposits a copious sediment. Tinct. cinchonæ, tinct. cascarillæ, and tinct. sanguinariæ, precipitate a copious sediment on standing.

Tinct. Cinchonæ and Tinct. Cinchonæ Comp.—Why should yellow bark be used in the one tincture, and red bark in the other?

As it is desirable that all communications in regard to the Pharmacopœia should be judged of by their own merits, I will simply contribute this as a member of the Massachusets College of Pharmacy.

Signed,

A MEMBER OF THE MASSACHUSETTS COLLEGE OF PHARMACY.

Tinct. Ferri Chloridi.—The quantity of acid of the Pharm. strength is not sufficient, according to my repeated trials, to dissolve the six ounces of Carb. Ferri in the formula. Would it not be well to amend by adding after the word pint, the words or a "*sufficient quantity*," and after the word alcohol the words "Q. S.," to make with the solution four pints of the tincture?

Liq. Ferri Iodidi.—I would change the name to syrup, and increase the quantity of sugar to sixteen ounces. Such a change would form a good syrup.

Ferri Sub-Carb.—Change the name to Ferri Sesqui Oxidum, or Ferri Carb.

Hydrarg. Iod.—Much variation in the color and density of the article; it requires attention.

Infus. Rhei.—Inferior rhubarb is so common, that I think the one drachm of the formula should be increased to two drachms.

Oleum Camphoratum would be more expressive, and a better name than the present name of Liniment. Camph. Besides, the nearly allied term Lin. Camph. Co. of the Lond. and Dublin Pharm. is a very different preparation.

Mist. Ferri Comp.—This mixture keeps pretty well without the iron. Would it not be well to direct that the iron be added when it is dispensed?

Pil. Cathart. Co.—I think the old formula which directs *pulv.* extract jalap, better than the present *extract.* The extract is seldom found of a convenient consistence to be used without powdering.

Pil. Ferri Comp.—Made by the present formula, carbonic acid gas is evolved, and the mass puffed up. I have made a good pill mass by taking the solid ingredients in the quantities ordered, then dissolving, at a water bath temperature, the iron in one fluid drachm of simple syrup, adding the soda, stirring until effervescence ceases, then mixing the myrrh.

Pulv. Cretæ Co.—No formula, but frequently prescribed.

Syrupus Simplex.—Thirty ounces Troy weight is too large a quantity of sugar for one pint of water, as ordered in the Pharm. I find one and three fourth parts of sugar to one part of water or other liquids of which syrups are made, is a much better rule.

Ung. Hydrarg. Nitrat. Mit.

R.—Ung. Hydrarg. Nitrat. . . . . One part.
Ung. Simp. . . . . Two parts.
Rub together, avoiding any contact with metal.

Ung. Plumbi Acet.

R.—Acetate of Lead in fine powder . . One part.
Simple Ointment . . . . . Twenty parts. ℳ.

Ung. Veratriæ.

R.—Veratria . . . . . One part.
Lard . . . . . Twenty parts. ℳ.

Remarks on some of the Formulæ and Compounds.—I am satisfied from trial, that the present formula for Spirits of Nitre Dulc. if carefully followed, does not uniformly produce a good article. Much, if not all of the articles sold in the market is weak, acid, and impure. As the strength depends upon the quantity of hyponitrous ether in it, and as the boiling point of that ether is very low, would not the boiling point, together with its specific gravity, be of some value as a test of its strength?

Alcohol and Alcohol Dilut.—The Pharm. defines alcohol to be rectified spirit of the specific gravity of 0.835, and diluted alcohol to be the same spirit, of the specific gravity of 0.985. Moreover, it directs it to be made by mixing equal measures of water and alcohol. I find that 10 measures of alcohol and 8 of water is more nearly correct.

Wine of Tart. Antim.—This is an uncertain preparation, made from the wines as found here. Might it not be better to use a weak spirit, say 4 parts of water to one of alcohol, instead of wine? A little caromel or molasses might be added to give it a color.

All the medicated waters made from the oils may be made good and will keep well, if well mixed with clean sand, and displaced through a narrow displacer; the neck of a broken retort answers well for making a quantity not exceeding one or two quarts.

The magnesia ordered in the Pharm. is slightly soluble, and consequently objectionable. Probably Aqua Camphoræ might be made in the same manner.

Pil. Colocynth. Co.

(Dublin Disp. Copy substituting Troy for Avoird. Weight.)

R.—Pulp of Colocynth in powder		℥i.
Hepatic Aloes in powder		℥ii.
Scammony in fine powder	*aa*	℥i.
Castile Soap		
Treacle		ʒx. or q. s.
Oil of Cloves		f.ʒi.

Reduce the soap to fine powder, and mix it with the aloes, colocynth, and scammony, then rub together with the oil of cloves and treacle, and heat them into a uniform mass.

Solution, or Tincture of Strychnia.

R.—Strychnia	gr. i.
Alcohol	ʒii.
Water	ʒvi.

Mix, and add Acid Sulph. Dil. q. s. to form solution.

Strychnine is frequently prescribed in quantities, and in such menstruum as will dissolve it without acid.

Tinct. Ergotæ. Nearly Saturated Tincture.

R.—Ergotæ in pulv.	℥iv.
Alcohol Dil. q. s.	

Macerate 24 hours, then by displacement obtain one pint of Tinct

Tinct. Rhei Dulc.

(From Thacher's Disp. excepting the substitution of 2½ pints for 2½ pounds.)

R.—Root of Rhubarb in coarse powder		℥ii.
Root of Liquorice bruised	*aa*	℥i.
Anise seed bruised		
Pure Sugar		℥ii.
Diluted Alcohol		Oiiss.

Digest for seven days and filter.

Tinct. Sennæ Comp.

(Same as Dublin, except substitution of Troy for Avoirdupois Weight, and Oiss. for two pints imperial measure.)

R.—Senna		℥iv.
Cardamon Seeds bruised	*aa*	℥ss.
Caraway Seeds bruised		
Proof Spirit		Oiss. ℿ.

Macerate fourteen days and filter.

Substitute a tincture or solution of the oils in alcohol, such tincture to be of the same strength in each individual case.

Vin. Ergotæ.—Weak and uncertain. Becomes sour.

I would suggest the introduction into the Dispensatory of the following, or of some better formulæ. Prescriptions are common for many such compounds, or similar ones as here follow.

Emplast. Antimonii Tart.

℞.—Burgundy Pitch . . . . . ℥i.
Tartarised antimony (fine powder,) . . ʒii.

Melt the pitch at water bath temperature in an earthen vessel, and mix the antimony thoroughly.

This makes an irritating plaster which adheres well to the skin, and answers the purpose well.

Infusum Sennæ Comp.

(Said to be from the Massachusetts Hospital.)

℞.—Sennæ Mannæ, *aa* . . . . . ℥i.
Potassæ Bi-tart. Pulv. Jalap. Sem. Carui Cont. *aa* ʒii.
Aquæ Bull. . . . . Oi.
Digest for 12 hours, strain, and add
Tinct. Sennæ Comp. . . . . ℥iv.

Liquor Morph. Acet.

℞.—Morph. Acetatis . . . . . gr. i.
Aquæ Dest. . . . . f.ʒi.
Acet. Dest. q. s.

Liquor Morph. Hydrochlor.

℞.—Morph. Hydrochlor. . . . . gr. i.
Aquæ Dest. . . . . f.ʒi. Solve.

Syrup. Morph. Acet.

℞.—Morph. Acet. . . . . gr. i.
Syrup Simp. . . . . f.ʒi.
Acet. q. s.

Syrup. Morph. Hydrochlor.

℞.—Morph. Hydrochlor. . . . . gr. i.
Syrup. Simp. . . . . f.ʒi. Solve.

SUGGESTIONS OFFERED TO THE COMMITTEE ON A REVISION OF THE PHARMACOPŒIA.

The practice of having the formulæ of foreign medical colleges copied into and immediately following our own in the U. S. Dispensatory, unnecessarily increases the size of the book; besides, it gives them a kind of authority to which they are not entitled. All physicians prescribing in this country, whether natives or foreigners, ought to be required to prescribe the articles and compounds of the U. S. Pharmacopœia and by their precise terms; or if any other preparation is required, they should distinctly signify it in writing.

No alteration in officinal formulæ should be made unless it is certain that a much better preparation will be the practical result.

In giving a name to a compound, reference should be had to the names of other and dissimilar compounds in our own and in foreign Pharmacopœias. It is desirable to have dissimilar names for different things.

It is worth inquiry whether the term parts might not advantageously be substituted for pounds, ounces, &c., at least in such of the formulæ as direct the use of solid substances; in such case, so many parts of one or another thing to be used would of course be understood to be parts by weight.

In regard to all articles liable to immediate change, the formula should direct them to be prepared when wanted. I think it would be well to add to each formula a list of the more common articles with which it is chemically incompatible.

I would leave out of the Pharmacopœia entirely, the following, for reasons annexed.

Acetum Opii.—Deposits sediment on standing.

Ferri Iodidum.—Changes.

Ceratum Plumbi Sub-Acetatis.—Becomes quickly rancid. Substitute a simple mixture of f.ʒi. of Liq. Plumb. Sub-acetatis, with one ounce of simple ointment.

The whole class of *Spiritus* where the constituents are alcohol, or diluted alcohol and essential oils; these distilled spirits, as directed in the Pharmacopœia, are rarely met with in the shops.

think that some of the manufacturers of fluid extracts, in their anxiety to extend their list, have overlooked some of the most important requisites of a good fluid extract, viz. permanence of solution, uniformity in strength, and to represent fully the crude material from which it is prepared.

Many of those now in the market are faulty in these particulars, varying in their appearance, constantly depositing, and are inefficient and variable in the doses prescribed by the manufacturers.

We have for a number of years made some six or eight fluid extracts, and our rule has been to have them of such a strength, that one fluid drachm, with a few exceptions, should be a medium dose. This plan we find the most convenient for our physicians in prescribing, and a quantity not objectionable to the patient. We have added to our list, from time to time, such medicines as were considered proper to be used in this form.

As it is very probable that the subject of fluid extracts will form a prominent feature in the next edition of our Pharmacopœia, it is important that such formulæ be adopted, the practical operation of which shall be within the scope of apothecaries generally: and in this connection I would suggest, that in composing the formulæ for them, the *fluid drachm dose* be the *governing rule*, instead of the present standard. This plan I think would be preferred by physicians.

The paper by a "Member of the Massachusetts College of Pharmacy," accompanying this report, was received previous to issuing my circulars in November last. It contains suggestions which merit the attention of the Association.

JAMES S. MELVIN.

proper vessel, and pour immediately into suitable moulds, previously warmed.

Bismuthum.—The attention of the Association is asked to sub-carbonate of bismuth, as recommended by Dr. Hannon, of Brussels; (see Jour. Pharm. Sept. No. page 403.)

From its chemical characteristics, and the favorable opinion of our physicians who have used it in their practice, it is deemed worthy of a place in the new edition of the Pharmacopœia.

Confectiones.—Would suggest that glycerin be substituted for honey in confections.

Sp. Lavand. Comp.—Would recommend instead of the present officinal formula, for Sp. Lavand. Comp., the one suggested by Mr. Coggeshall, (Jour. Pharm. vol. 18, page 221.)

This being strictly a tincture, it should be so called, and classed accordingly.

Tinctura Capsici.—Would suggest the employment of alcohol, instead of diluted alcohol, in preparing this tincture; that menstruum being a better solvent for the active principle.

Infus. Sennæ Comp.—The attention of the Association is asked to the formula for Infus. Sennæ Comp., presented by Dr. Henchman, at the last meeting of this Association. It is in universal use in this vicinity, and I think it should take a place in the next edition of the Pharmacopœia.

Tinctura Opii Camph.—It is recommended to add twelve grains of cochineal to the formula for this tincture, with the design of further carrying out the purposes for which the Liquorice was omitted in the last edition.

Weights.—In all cases where the troy or apothecaries weight is intended, it is suggested that the weight be always expressed in ounces, rather than in pounds, or fractions of a pound. This would be a more uniform mode of expression than exists in the present Pharmacopœia, and which in a work of this kind is very desirable, it would also be a safeguard in some cases against the liability of mistaking the avoirdupois for the apothecaries' division of a pound.

Extracta Fluida.—In these days of fluid extracts, it is to be supposed and expected, that each member of this Committee will give his experience and general views in regard to them. From our own observation, and the remarks of physicians, we

Alumen Exsiccatum.—Nothing.
Aqua Ammoniæ.—Nothing.
Spiritus Ammoniæ.—Give specific gravity.
Do. do. Aromaticus.—Give specific gravity.
Liquor Ammoniæ Acetatis.—Nothing.
Ammoniæ Carbonas.—Nothing.
Antimonii et Potassæ Tartras.—Nothing.
Vinum Antimon. Tartratis.—Would suggest the importance of using Sherry wine, as inferior qualities of wine frequently precipitate the teroxide of antimony.
Antimonii Sulphuretum Precipitat.—Nothing.

CHARLES T. CARNEY,
Boston, Mass.

Section 2. From "Aqua" to "Cuprum," inclusive.

To the Chairman of the Committee:—

In accordance with the plan adopted by the rest of this Committee, I sent circulars to many of the apothecaries in New England, soliciting their aid and co-operation in this work; but have received no reply from any quarter. This is much to be regretted, as it was hoped that a partial if not a general contribution might be obtained.

As one of your Committee, I submit the following suggestions upon Division No. 2. of the Pharmacopœia assigned me.

Aqua Destillata.—Boil the water before putting on the head of the still, after which distil two pints and throw them away; then distil three-fourths of the remainder.

By this method, I am convinced, we dissipate more thoroughly the volatile impurities.

Aqua Cinnamomi.—Cinnamon water made according to the officinal formula, is very liable to become turbid. We have used prepared chalk instead of magnesia, and find it to remain clear and free from the above objection.

Argenti Nitras Fusus.—Would recommend, instead of the officinal formula, to fuse the crystals of nitrate of silver in a

SUPPLEMENTARY REPORTS ON THE REVISION OF THE PHARMACOPŒIA.

PREPARATIONS.

Section 1. *From "Aceta" to "Antimon. Sulph. Precipitat." inclusive.*

Acetum Distillatum.—No suggestions to offer as to process of preparation or chemical characteristics, but would suggest the addition of some standard specific gravity, and the actual amount of cryst. bi-carbonate potassa which is required to saturate one fluid-ounce.

Acetum Colchici.—Recommend the use of fresh root.

Acetum Opii.—Nothing to suggest.

Do. Scillæ.—Nothing.

Acidum Aceticum Dilutum.—Nothing.

Do. Benzoicum.—Nothing.

Do. Gallicum.—Nothing.

Do. Hydrocyanicum Dilutum.—Nothing.

Do. Muriaticum Dilutum.—Give chemical characteristics, such as no precipitate by BA,Cl, &c., &c.

Acidum Nitricum Dilutum.—Give chemical characteristics; no precipitate by AgO,NO^5, &c &c.

Acidum Sulphuricum Aromaticum.—Nothing.

Do. do. Dilutum.—Give chemical characteristics.

Acidum Tannicum.—Nothing.

Aconitia.—Nothing.

Ætherea.—Nothing.

Oleum Æthereum.—Nothing.

Spiritus Ætheris Compos.—Nothing.

Do. do. Nitrici.—Nothing.

Chloroformum.—Nothing.

Collodium.—Would suggest the substitution of formula of Prof. Procter, published in Journal of Pharmacy for March, 1857, for the one now in the Pharmacopœia.

Alcohol.—Would suggest that a brief, lucid, and concise description of the meanings of "Proof," "Per cent," and "Above Proof," be added, as it appears these terms are not well understood.

strictly speaking, do not call for these remarks, but your Committee feel that their duty to their profession and to society is to make every effort in their power towards bringing some order from the mass of confused material now in common use, and not recognized in the Pharmacopœia, and if possible to excite in the mind of every member of our profession a feeling of responsibility and a desire to benefit the profession at large.

In conclusion, your Committee again express their sense of the importance of the duty assigned them and feeling that they cannot expect to do much more than offer suggestions to be used by a succeeding committee, they hope that these, their imperfect efforts, may be regarded as such by the Association.

Your Committee have endeavored to urge upon the pharmaceutists the great importance of this work, by personal interview and by circular letters as before stated, and while the fact of our having received no more sympathy and assistance is discouraging, we still have the satisfaction of feeling that we have endeavored faithfully to discharge the duty assigned to us; and we trust that if the pharmaceutists at large have any interest in this work, that they may have been somewhat awakened to its importance by our efforts, and may give our successors, if called upon, that support and assistance we had hoped for ourselves.

Very respectfully submitted,

CHARLES T. CARNEY, Chairman.

On behalf of the Committee.

Division No. 5 was assigned to Edward Parrish. He was able to devote but little attention to it, owing, as previously stated, to failing health; but previous to sailing for Europe he wrote a short communication to the Chairman, expressing his regret at being obliged to relinquish his purpose of fully examining the portion assigned to him. He referred particularly to one article, Glycerina, which he advocated putting in the "list," and also giving its description, chemical characteristics, specific gravity, &c.

He had no modifications to offer as to the Mercurial or Iodine preparations.

The Liniments he intended writing about, but was prevented. Your Committee express the hope that the Association may be favored with the assistance of our valued friend, when he shall have returned with renewed and established health.

The Report by Mr. Meakim, of New York, upon Division No. 9, "Tincturæ," is one of importance to every member of our profession, and to society at large.

It is hoped that the suggestions as to uniformity of preparations, bearing the same name but differing in their composition, may be fully considered, and, in the language of Mr. Meakim, "with the present facilities for frequent communication with our trans-Atlantic brethren, we might meet in a common centre, and determine for each preparation of mutual adoption, a definite name, (and composition?) that would be recognized wherever our language is spoken." The remarks upon the substitution of terms, "Liniments" for "Tincturæ," "Cerata" for "Emplastra," also those upon the Solutions and Syrups of Morphia, are worthy the attention of the Committee into whose hands our work may fall.

In the opinion of your Committee, it would be worthy the attention of the Association to consider the practicability of a correspondence with other medical and pharmaceutical bodies of our own and foreign countries, with a view of establishing, if possible more uniformity in name and composition of many of our preparations, and of "fraternizing if possible under the spreading leaves of one general Pharmacopœia."

It may be said that our duties as the Committee on Revision,

The Report upon Division No. 4 merits the attention of the Association, and contains many suggestions worthy the consideration of the Revising Committee. Those upon "Aqua Distillata," "Aqua Cinnamomi," "Bismuthum," "Weights" and others, will attract the special notice of pharmaceutists.

To the remarks upon "Extracta Fluida" your Committee would call the attention of the Association, and would express themselves in favor of the proposed standard of strength in relation to the dose, making a fluid drachm the medium dose of these preparations, with but few exceptions.

The paper, by "a member of the Massachusetts College of Pharmacy," accompanying this special Report, was handed to Mr. Melvin, previous to the issuing of the circular letter, before referred to. Many of the suggestions contained therein are deserving consideration.

The very full Report upon Division No. 4, comprising "Extracta Fluida" and "Ferrum," will merit the attention of the Committee, into whose hands our Report may pass; and in this connection your Committee would suggest the propriety of having in the Pharmacopœia, formulæ for the preparation of all the fluid extracts. It has become a matter of quite serious consideration with many pharmaceutists, whether this era of fluid extracts is beneficial to our profession, and the manufacture as now conducted is thought by many to be anything but an advantage.

In the smaller cities, where the demand for a single kind is limited, the pharmaceutist must purchase a large variety, thereby diminishing the profit of his business; whereas, if formulæ were available, he could make them himself, and thus, while gaining in pharmaceutical knowledge and manipulation, be at the same time conscious of furnishing an article that he knows to be reliable.

Your Committee have been personally aware of the fact, that many of the fluid extracts now in the market, are not always reliable, and much fault has been found with some of the more common ones, as Senna, Senna Comp., Rhubarb, and others. It is hoped by your Committee that the suggestions offered in Report of Division No. 4, may be carefully considered by the Committee of Revision.

pare the Report of the Committee in season for the meeting in September. I have felt some diffidence in assigning the several portions to the different members, but as each member will not be confined to his "speciality," but will, I hope, feel perfectly free to offer suggestions upon any or all the subjects treated of in the Pharmacopœia, it seems to be a matter of less consequence, as to whom any particular portion is referred.

CHARLES T. CARNEY, Boston, Mass.

Chairman of Committee of Revision.

Div. No. 1.
Aceta,
Acida,
Aetherea,
Alcohol,
Alumen,
Ammonia,
Antimonium.

Div. No. 2.
Aqua,
Argentum,
Arsenicum,
Barium,
Bismuthum,
Calx,
Carbo Animalis,
Confectiones.
Cuprum.

Div. No. 3.
Emplastra,
Extracta.

Div. No. 4.
Extracta Fluida,
Ferrum.

Div. No. 5.
Glycerina,
Hydrargyrum,
Infusa and Decocta,
Iodinum,
Linimentum.

Div. No. 6.
Magnesia,
Mellita,
Misturæ,
Morphia,
Mucilagines,
Ol. Distillata.

Div. No. 7.
Pilulæ,
Plumbum,
Potassæ,
Pulpæ.

Div. No. 8.
Pulveres,
Quinia,
Soda,
Spiritus,
Spongia,
Stannum,
Strychnia,
Styrax.
Sulphur,
Syrupi.

Div. No. 9.
Tincturæ.

Div. No. 10.
Trochisci,
Unguenta and Cerata,
Veratria,
Vin. Medicata,
Zincum.

It gives me pleasure to acknowledge the very hearty support and assistance I have received from Messrs. Stearns, of Detroit, Meakim, of New York, and Melvin, of Boston; the other members I have not had the pleasure of hearing from, excepting our friends, Mr. Edward Parrish, now absent, and whose failing health prevented his giving that assistance he would so willingly have rendered, and Mr. Henry F. Fish, of Waterbury, Conn., who has been engrossed by other cares.

The plan adopted by your Committee, that of a division of the work, enables us to offer a distinct Report upon each portion of the Pharmacopœia, and those received are herewith submitted.

The suggestion as to an article, (in Division No. 1,) briefly explaining the meaning of the terms applied to alcohol, as "Proof," "Per cent.," &c., are deemed worthy of attention.

sonally visited the pharmaceutists of the principal cities and towns of Maine, New Hampshire, Vermont, Massachusetts and Rhode Island, and presented a copy of this circular, urging upon the pharmaceutists the importance of the work and soliciting their co-operation.

It is mortifying to confess that, as yet, your Committee have not received a single reply to these circulars; it is also somewhat discouraging, and your Committee would ask the indulgence of the Association if this report does not meet their expectations. The past year has been one of unusual care and anxiety, when one's whole time and attention was needed with one's private business, and therefore the members have been less able to investigate and devote themselves to the duties devolving upon the revision of the Pharmacopœia.

Being left without the assistance asked for from the profession at large, the work has fallen chiefly upon the members of the Committee, and they trust that their efforts, incomplete as they are, may prove the wedge which will, by repeated and well directed blows, bring to a successful termination, this, to every lover of our profession, important work.

As Chairman, I issued to each member, in November last, a circular letter assigning to the several members the section I hoped might be most agreeable, for their personal examination but it will be seen no member was limited to his "speciality." A copy of this circular I herewith annex, as follows, with the division assigned to each member:

Boston, November, 1857.

Dear Sir:—I propose dividing the work of revising the Pharmacopœia into ten Divisions; one of which is to be assigned to each member of the Committee, for the purpose of having each Division carefully examined, and such suggestions made as may be deemed proper by the different members.

I would say also, that any suggestions as to additions, omissions or modifications of any portions of the Pharmacopœia that may be known to any of the members, I trust will be freely given, not confining themselves strictly to the investigation only, of the part that falls to their particular study.

The list of Materia Medica, both primary and secondary, should be subjected to the careful examination of each member, and any alterations thought best to be made, suggested. I trust that I shall be favored with frequent communications from the different members, and that I may be able to collect as early as the first of June next, such data as will enable me to pre-

It has therefore appointed a suitable Committee, with instructions to confer directly with the Pharmaceutists of the United States, in order to elicit from them such improvements as their experience enables them to suggest.

I, therefore, as a member of that Committee for the NEW ENGLAND STATES, respectfully invite your attention to this subject, hoping you will give it due consideration, and that you will, at your earliest convenience, transmit to me all improvements your experience may have suggested to you, in regard to the reconstruction of any of the formulæ of our Pharmacopœia, communicating methods of manipulation by which you have increased the therapeutical value, imparted greater stability, or rendered more elegant and agreeable the officinal pharmaceutical and chemical preparations.

It is important that you communicate the formulæ of all new and eligible pharmaceutical preparations which you may have originated, the usefulness of which you desire to extend.

It is desired that you record and transmit all new facts and observations concerning the medicinal action of the unofficinal plants, indigenous or naturalized, in your section of country, as well as all known methods of rendering them pharmaceutically most eligible as medicines.

All information upon these and kindred matters of interest to the Physician and Pharmaceutist, will be gratefully received, and appropriately acknowleged in our Report.

As the United States Pharmacopœia is necessarily restricted to remedies of a thoroughly established or national reputation, and changes in, or additions to, its present formulæ can only be made with propriety after repeated trials and mature deliberation, I would suggest that you be as definite as possible in your reply, and that you give reasons and facts such as will entitle it to the most favorable consideration in the hands of the Revising Committee, to which the results of the present Committee will be given for final report.

Those offering improvements, new formulæ or medical facts, are remined that their suggestions will be of value to the profession at large, whether adopted by the Committee of Revision or not.

An opinion prevails to some extent, that our Pharmacopœia is of too local a character. If this is so, it is due to accident, and not design; and a remedy lies in every Physician and Pharmaceutist doing his share of the preparatory labor, and thus giving the Revising Committee of 1860 ample material upon which to base the reconstruction of a standard, and enabling them better to judge the wants of the professional public.

I trust, Sir, that I shall receive an early reply, awaiting which,

I am, respectfully, your friend.

CHARLES T. CARNEY, Boston, Mass.

Chairman of the Committee upon the Revision of the U. S. Pharmacopœia.

In addition to these circulars sent by mail, the Chairman of your Committee has, during the past winter and spring, per-

One important point will have been gained, in the initiation to a system of weights and measures, that meets with present opposition chiefly from its lengthy and formidable array of terms. In the hope that pharmaceutists, for their use at least, will advocate the exclusive system of weights, and as a member of the Committee under your guidance, finding it impracticable to meet in committee, I submit these verbose remarks for your approval, or for the more salutary application of your experienced pruning hook. Subscribing myself most respectfully your fellow member of the American Pharmaceutical Association.

JOHN MEAKIM.

New York, Aug., 1858.

REPORT ON THE REVISION OF THE PHARMACOPŒIA.

The Committee upon the revision of the Pharmacopœia, appointed at the annual meeting of this Association, held in Philadelphia, September, 1857, beg leave respectfully to report:—

As early as November, 1857, the duties of the Committee were entered upon, and efforts made to enlist the aid and support of our pharmaceutical brethren in this work, which has been viewed by your Committee as one of great importance. Early in November there was sent out, addressed to the pharmaceutists in the principal cities and towns of the Western, North-Western and New England States, a circular, as follows: those for the Western States being sent by Frederick Stearns, of Detroit, and those for the New England States by James S. Melvin and Charles T. Carney, of Boston. As nearly as possible these circulars were sent to every pharmaceutist, in the sections named.

BOSTON, MASS., November, 1857.

SIR:—The American Pharmaceutical Association, in view of the approaching revision of our National Standard, the UNITED STATES PHARMACOPŒIA, deems it incumbent upon its members, and upon all Pharmaceutists who possess valuable experience, to contribute it in aid of that labor.

their partial transfer from vessels of capacity, and also the time and labor necessary to cleanse those vessels for the use of other liquids. If, for some liquids, the advantage of weight over measure be conceded, then the only objection to its adaptation to all other liquids would be in the violation of an imperfect system, sanctioned only by usage. We often hear the remark that changes create confusion, and are advised to let (what some are pleased to term) well enough alone. In such advisers we may look in vain for the steam of a Fulton, the electricity of a Morse, or the pioneer in any reform requiring energy to effect.

I can readily conceive the convenience of measures of capacity to the ambulatory dealer in specialities; as lamp oil, molasses, milk, &c.; but those measures need not be recognised by any adopted system; they can be made to conform to any given weight of the article for which they may be intended, and stamped with the name of the article and the quantity or weight; thus, *molasses*, 10 *hectograms*. Lighter fluids of course would require larger vessels to contain a weight equal to the heavier fluid.

If, in opposition to my views, a scale of measure of capacity be deemed essential, I would propose a selection from that adopted by the French, in the same manner as proposed for the scale of weight; thus, centilitre, equal to about 2¾ drachms; litre, about two pints, and hectolitre, about twenty-six gallons; the prefixes in these, as in those of the proposed scale of weights, would indicate the multiples of 100; thus,

	1 centilitre	= about	2¾ drachms.
100 centilitres	= 1 litre	= "	2 pints.
100 litres	= 1 hectolitre	= "	26 gallons.

In the adoption of this scale, the ambiguous prefixes *deci* and *deca* are avoided, giving distinct initial letters to each term for abbreviation; as C. L. for centilitre; L. for litre, and H. L. for hectolitre. The scale embraces a sufficient range for general purposes. If, however, these proposed scales of weights and measures, having been adopted, should prove to be insufficient for practical purposes, we can easily make a further demand upon the French scales.

to any new system, without greater efforts than many are disposed to make; therefore it is better to leave the old scales and their terms undisturbed; time will effect their peaceful exit, and give to the decimal system undisputed possession.

To facilitate a familiarity with the terms and comparative values of the proposed scale, I suggest to those who may favor the scheme, the conspicuous exhibition of a table as follows:

Proposed Scale of Weights.

	1 centigramme	=	about 1-6th of a grain.
100 centigrammes	= 1 gramme	=	" 15½ "
100 grammes	= 1 hectogramme	=	" 3½ oz. avoir.
100 hectogrammes	= 1 myriagramme	=	" 22½ lb. "

Such an exhibition would arrest attention, incite inquiry, promote discussion and develope public opinion. The importance of adopting such a system as will be acceptable to the commercial and scientific world, behoves us to weigh the subject carefully to that end, by an interchange of ideas, by a close analysis of the points in debate, and by a disposition to compromise and harmonise with one grand system.

Aside from the desire to co-operate with my fellow members in all that will tend to the popular adoption of any one system, I would entirely abrogate the use of measures of capacity. But I am too well aware of the tenacity with which we cling to time-honored customs to look for such an abrogation in our time. Yet I may be allowed to cite a few of the advantages occurring to my mind, in favor of the substitution of weight for measure in determining quantity. First, on the score of precision. The measure of liquids varies with varying temperatures; it also requires considerable addition to shew an appreciable increase. Hence, essential oils and other costly liquids, are estimated by weight, which is invariable under any temperature, and can be determined to a grain. Because crude or less expensive liquids do not require that precision in commerce, should we be equally indifferent to the precision of the system? Again, on the score of facility and convenience. For general, but more especially for pharmaceutic purposes, the advantage of weight over measure is practically demonstrated in the cases of balsams, fixed oils and other viscid fluids that require a lapse of time, even for

or basis, without which no system can be perfect; on this they have erected a decimal system of weights, measures, &c. Their weights consist of the milligramme, the centigramme, the decigramme, the gramme, the decagramme, the hectogramme, the kilogramme and the myriagramme.

I propose to submit for the consideration of my colleagues the propriety of adopting the French scale in part, by selecting its alternate weights; thereby reducing the number from eight to four; the advantages gained would be in abolishing the ambiguous decigramme and decagramme before alluded to, and in having different and distinct initial letters to each, for the purpose of abbreviation; thus C. G. would represent Centigramme, G., Gramme, H. G., Hectogramme and M. G., Myriagramme. The minimum weight is equal to about the one-sixth part of a grain, and the maximum is equal to about twenty-two and a half pounds avoirdupois; the multiples and divisions of which are fully equal to every conceivable want.

In support of these views, and in proof of the natural adaptation of the mind to them, I refer you to our decimal system of currency; it is practically a system of dollars and cents. Although the scale embraces eagles and dimes, we rarely hear of them in the circle of trade, and we never find them in our ledgers; the reason is simply because dollars and cents are brief, yet comprehensive enough for our wants. However the scale is established, the people have adopted the practical part of it, and the remainder is harmless as it is needless.

It is on this principle that I propose to submit the French scale of weights. By adopting the essential and practical parts, they could easily be understood, and would accord with the French, except that for the amount of nine decagrammes and five grammes we should express it by ninety-five grammes; the brevity of the latter commends itself. With such a scale we shall be prepared to serve the disciples of the drachm or gramme system without conflict, the titles of each scale being distinct as their respective values. The importance of this view cannot be overestimated, when we consider that however simple the new system may be, we can look only to its complete adoption by those who are to succeed us; the force of habit is too strong in us to forget the drachms and scruples of our past lives, or to conform

The Committee appointed by the American Pharmaceutical Association, in their last year's report, adopted the views of the before named joint Committee, and recommended them for consideration.

The French system of weights and measures, having also a decimal basis, merits our attention; it certainly possesses advantages in its present adoption by a large class of the citizens in one of the first commercial nations, and therefore justly claims priority in decimal practice. The argument urged against the adoption of it is based on its unfamiliar nomenclature;—all admit the beauty of its theory;—thus, decigramme, the one-tenth part of a gramme, and decagramme, ten grammes; the very terms express their relative proportions. I have selected these illustrations also to exhibit an objection, for which I am prepared in the sequel to propose a remedy. The objection consists in the close chirographic resemblance in the prefix *deci* to that of *deca*, while the difference in value is equal to one hundred times.

In recurring to the American proposed system, a paramount objection may be found in the attempt to establish a new scale, and retain the arbitrary names of another. We pharmaceutists too often experience the doubt and confusion created in our minds by having preparations identical in name, but differing in properties and composition, not to apprehend the similar difficulty in weights, &c., of an unequal value, bearing the same name.

It is proposed to remedy this ambiguity, by the prefix *new* to the terms of the proposed scale; but experience proves the fallacy of this proposition; as in the case of the prefix *fluid* to the ounce of measure, which is rarely used, although the difference between the ounce of measure and that of weight is material, in cases of light and heavy fluids; as chloroform, sulphuric acid, sulphuric ether, &c.

Another advantage in a new nomenclature to a new scale, viewing it from the pharmaceutic platform, would be in the hopeful abolition of those mystical quavers and bi-quavers, denoting drachms and ounces, which are often ill-defined sesqui-quavers, requiring explanation or revision by the physician who formed them.

To the French belong the honor of having established a unit

SUPPLEMENT TO THE REPORT ON WEIGHTS AND MEASURES.

To the Chairman of the Commitee:—

The subject of a uniform system of weights and measures has for a long period been a comparatively fruitless theme of discussion. It has engaged the attention of the deliberative and scientific bodies of the old world without fully producing, as yet, an acceptable result.

The necessity of such a system has awakened the attention of this country, and committees of commerce and science, around us and of us, have this important subject under consideration.

As a member of the Committee, of which you are Chairman, I beg leave to submit a few general ideas on the subject.

On reviewing the labors of those who have preceded us in this undertaking, I would respectfully ask, Have they not proposed too much? Have they not overlooked the beautiful simplicity that should characterise the result of their labors? Have they not multiplied and attenuated beyond the requirements of the case?

The real difficulty consists, not in the arrangement of a scale of weights and measures, but in the adaptation of the mind to its reception and adoption. The only question arises, what system will be most acceptable; for it is a subject in which every man has a voice, either of suggestion or acceptance; then clearly that system most concise and explicit, yet embracing all our wants; most facile to the memory, and most easy of computation, will the most readily conduce to the transition of mind necessary for its adoption.

I find by reference to the report of the joint Committees of the New York Chamber of Commerce, and of the American Geographical and Statistical Society, that having carefully considered the subject, they propose to supersede the orders of weights now in use, by the establishment of one, the scale of which is to consist of seven weights, to be designated by the old terms of grain, scruple, drachm, &c., and each to represent in succession the value of ten multiples; thus, ten grains make one scruple, ten scruples one drachm, and so on; the order of this scale to be regulated by the pound, which will correspond with the pound avoirdupois.

the globe in contact with the more enlightened nations of the earth, and the transactions of commerce would be greatly facilitated by such a system as should commend itself by its simplicity and utility and adaptability to other nations, and thus become a great aider and promoter of that intercourse, resulting in the spread of such correct ideas of self-government and independence as will be for the good of other and less favored nations of the earth. Nay, more than this, we are annihilating distance and bringing mankind to the use of a common language written by Heaven's own law, and therefore it should be not of diverse signification, but alike in all lands and climes. When earth, as it soon will, shall have an electric current encircling it from the Atlantic shore to the Pacific shore, conveying its messages from point to point for love or profit, at least its commercial wants should be made known in uniform words, meaning the same here and in London, in Paris and Lisbon, in Constantinople and Sierra Leone, in Rome, if she has anything to sell, and Norway. What a grand idea it would be to be able, as we shall be, to flash our orders to London, Liverpool, Berlin and Paris for any wants we may have unsupplied, and when we spoke of pounds or ounces here they understood the same there. Or still more, if we extend the limit of our orders to the remoter nations, to know that the same uniformity rendered the orders as intelligible in one portion of the world as another.

The members of this Association may not live to see this, but it is not a prophecy, for the lines have gone across the conquered seas that proclaim the harbinger of such a day; and though it may be far off, yet the time will come when a uniform currency and a uniform system of weights and measures will be one of the indications of a millenial day, awaking harmony, peace and prosperity in all the lands of the earth.

C. B. GUTHRIE, Chairman.
S. S. GARRIGUES,
C. T. CARNEY,
WM. PROCTER, JR,
On behalf of the Committee.

point entirely. The question we admit is one of no ordinary difficulty. The very magnitude of the undertaking is quite sufficient to deter its advocates from rushing upon the effort unarmed by argument and philosophy. The progression of the age, the wants of the world, the demands of commerce, all look to a future of promise. The olden days, when the voyages of the ocean were made by sail alone, and commercial men were content to wait the waftings of a tardy wind months and months for return trips from foreign countries, found time abundant to calculate in any and all currencies and weights, quantities and values;—steam has changed all this, and begotten a more lively style of traffic, and we now see an effort sanctioned by our government to introduce a uniform currency, at least with that nation with whom we have most intercourse, and with every prospect of success, and we may confidently expect to see England introduce our decimal currency within a short time. If it be important that we should have a uniformity of currency, why not of weights and measures?

Besides this, something has been gained in the attention already bestowed upon the question of decimal weights and measures by different parties. We have seen favorable notices of this effort in several papers within the past month, and that too in various sections of the United States.

We must remember that in lending our aid to bring about a result so desirable as a uniformity of weights and measures, we must keep this point also in mind, that our opinions and views are not to be predicated upon what would be to apothecaries most acceptable and likely to come into use, though this should have its due weight of course, but what will be practicable and acceptable to the commercial world as well, and likely to meet their views and be generally adopted. In other words, our proposed changes must be marked with that liberality, the stamp of the age, and the sure evidence of progress; especially as there is no uniformity even in any one single country as regards them now. Here we have three kinds of weights, at least, in daily use, and various kinds of measures, and the same is true in other countries. The argument in favor of an attempt at this uniformity receives force in the fact that the use of steam is fast bringing other and remote countries of

REPORT OF THE COMMITTEE ON WEIGHTS AND MEASURES.

The subject of weights and measures, upon which a report was made at the last meeting of this Association, remains, as then, an open question. That report stated a few facts which we desire again to call to mind. The chief one was the fixed one of the uncertainty attending the present triangular system, by reason of the mixed character of the standards and the careless manufacture, together with the want of known and reliable units within the reach of any known test of accuracy available to any but scientific men. Thus half a dozen apothecaries may meet and compare the ordinary scales and weights used, and the more than probable result will be that no two will agree. The same may be said of the ordinary measures, especially the graduated glasses commonly used. This marked defect is not so apparent in prescription scales, as used by dispensing apothecaries because they take pains to correct both their weights and measures, but the ordinary scale sold to physicians is obnoxious to this charge. This main fact of the known unreliability of these important articles naturally suggested the necessity of reform; and in pursuing the subject, the diversity in the weights and measures used, suggested the question of carrying that reform beyond the mere point of *correction*, and extending it to a uniformity. The tables exhibited and plans projected in our last report were at that time submitted with due reservations; and while we conceded the one point, that the decimalization was, so far as offered, acceptable, we by no means looked upon it as settled, and the only one. The tables offered and the arguments adduced with them were more to open the subject to discussion than to urge a theory or state a plan as complete. That object has been attained in part, there having appeared some able articles in our various journals upon the subject since that paper was read to the Association.

Although some of these articles have not agreed with the arguments of that report, yet there are points in a decimal system of weights and measures commending themselves so strongly to our minds, as to yet render us unwilling to yield the

paration by hand; by machinery; its composition, and tests of strength.

Pulvis Pilulæ Hydrargyri. Its objects and preparation.

Unguentum Hydrargyri, U. S. P. Its composition, preparation and tests; methods of shortening the process; condition of the mercury. Mr. Donovan's ideas of its activity.

Emplastrum Hydrargyri, U. S. P. Its preparation.

Hydrargyri Chloridum Corrosivum, U. S. P.

Synonyms,

Hydrargyri Bichloridum, Lond. Ph.

Sublimatus Corrosivus, Ed. Ph.

Sublimatum Corrosivum, Dub. Ph.

U. S. P. process, characters, tests and antidotes.

Liquor Hydrargyri Chloridi Corrosivi, Lond. Ph.

Gowland's Lotion, Aqua Phagedænica.

Hydrargyri Chloridum Mite, U. S. P.

Synonyms,

Hydrargyri Chloridum, Lond. Ph.

Calomelas, Ed. and Dub. Pharm. Preparation on a large scale: Jewell's process of condensation by steam; Calvert's by atmospheric air; tests of purity.

Pilulæ Hydrargyri Chloridi Mitis.

Lotio Nigrum.

Hydrargyri Oxidum Nigrum, U. S. P. Preparation, alterations and tests.

Hydrargyri Oxidum Rubrum, U. S. P.

Hydrargyri Nitrico-Oxidum, Lond. Ph.

Red Precipitate. Its preparation and tests.

Unguentum Hydrargyri Oxidi Rubri, U. S. P.

Hydrargyri Sulphuretum Nigrum, U. S. P.

Ethiop's Mineral. Its preparation.

Hydrargyri Sulphuretum Rubrum, U. S. P.

Vermillion, Cinnabar. Preparation.

Hydrargyri Pernitratis Liquor, Dub. Ph. Acid nitrate of mercury.

Hydrargyri Sulphas, Dub. Ph.

Hydrargyri Sulphas Flavus, U.S.P.

Turpeth Mineral. Its preparation from the sulphate.

Hydrargyrum Ammoniatum, U. S. P.

Synonyms, Hydrargyri Ammonio Chloridum, Lond. and Dub. Ph.

Hydrargyri Precipitatum Album, Ed. Preparation and tests.

Unguentum Hydrargyri Ammoniatum, U. S. P.

Note. The reader will have perceived that this Syllabus is, as promised in the introductory chapter, suggestive of subjects for study rather than a source of information. A very large proportion of the subjects are treated of in the U. S. Dispensatory and Pereira's Materia Medica, very many of the newer articles in the American Journal of Pharmacy, and information on organic chemistry may be obtained from Gregory's Handbook of Organic Chemistry, Fownes' Chemistry, and others. For pharmaceutical and chemical manipulation, Mohr and Redwood's Practical Pharmacy, and Morfit's Chemical and Pharmaceutical Manipulation's may be consulted; and for practical hints in relation to extemporaneous pharmacy, Parrish's Pharmacy will be found very useful.

W. P., Jr.

ZINCI CARBONAS PRECIPITATUS, U.S.P. Preparation and Composition.

Ceratum Zinci Carbonatis.

CALAMINA PRÆPARATA, U. S. P.

ZINCI OXIDUM, U. S. P. Prepared from the carbonate.

Unguentum Zinci Oxidi, U. S. P.

ZINCI CHLORIDI, U. S. P. Officinal process. Wittstein's.

ZINCI CHLORIDI LIQUOR. Dub. Ph.

ZINCI ACETAS, U. S. P. Prepared from acetate of lead. Its crystallization a test of purity.

Preparations of Lead.

PLUMBI ACETAS. U. S. P. Tests of purity and freedom from subacetate, for dispensing.

LIQUOR PLUMBI SUBACETATIS, U. S. P.

Liquor Plumbi Subacetatis dilutus, U. S. P.

CERATUM PLUMBI SUBACETATIS, U.S.P.

PLUMBI NITRAS, U. S. P. Preparation and uses.

PLUMBI OXIDUM SEMI-VITREUM, U. S. P.

PLUMBI OXIDUM RUBRUM. Ed. Ph.

PLUMBI CARBONAS, U. S. P.

Unguentum Plumbi Carbonatis, U.S.P.

Preparations of Antimony.

ANTIMONII SULPHURETUM, U. S. P.

ANTIMONII SULPHURETUM PRECIPITATUM, U. S. P. Its preparations and tests.

Kermes mineral of Clauzel; common kermes.

Golden sulphuret of antimony.

True golden sulphur of antimony.

Antimonii oxysulphuretum. Crocus of antimony, antimony ash; glass of antimony; Crocus metallorum.

ANTIMONII CHLORIDUM. Preparation and uses when pure. Oxychloride or powder of Algaroth, U. S. P.

Subsulphate of antimony.

ANTIMONII OXIDUM, Dublin Ph.

PULVIS ANTIMONIALIS. Dub. Ph.

Preparations of Arsenic.

ARSENICUM, U. S. P. Its preparation from arsenious acid.

ACIDUM ARSENIOSUM, U. S. P. Its purity for medicinal use. Its antidote.

LIQUOR ARSENICI CHLORIDI, Lon. Ph.

LIQUOR POTASSÆ ARSENITIS, U. S. P. Fowler's mineral solution. Its preparation. Antidote.

ARSENICI IODIDUM, U. S. P. (See preparations of iodine.)

BISMUTHI SUB-NITRAS, U. S. P. Its tendency to contain arsenic.

BISMUTHI SUB-CARBONAS. Its preparation by Hannon's process.

Preparations of Silver.

ARGENTUM, U. S. P. Its preparation from coin by aid of nitric acid, salt, and hydrogen.

ARGENTI NITRAS, U. S. P. Preparation and tests.

ARGENTI NITRAS FUSUS, U. S. P. Its preparation. Adulterations. Tests. Dr. Squibb's test.

ARGENTI OXIDUM, U. S. P. Preparation and tests of purity.

STANNUM, U. S. P. Pulvis stanni, U. S. P. Prepared by fusion and agitation.

Preparations of Copper.

CUPRI SULPHAS, U. S. P. Purified by recrystallization.

CUPRI OXIDUM NIGRUM. Prepared from nitrate of copper.

CUPRI NITRAS. Its preparation and preservation.

CUPRI SUBACETAS, U. S. P.

UNGUENTUM CUPRI SUBACETATIS.

CUPRUM AMMONIATUM, U. S. P.

Preparations of Mercury.

HYDRARGYRUM, U. S. P.

HYDRARGYRUM PURUM, Dub. Ph. Its purification by distillation; and by solution of nitrate of mercury.

HYDRARGYRUM C. CRETA, U. S. P. Its preparation; deterioration; tests; Dr. Coxe's process; Stewart's process.

HYDRARGYRUM C. MAGNESIA. Dub. Pharm., made by direct trituration with the carbonate.

PILULÆ HYDRARGYRI, U. S. P. Pre-

from hydrocyanic acid and nitrate of silver. Its tests and uses

Preparations of Sulphur.

SULPHUR, U. S. P.

SULPHUR LOTUM, U. S. P.

UNGUENTUM SULPHURIS, U. S. P.

UNGUENTUM SULPHURIS COMPOSITUM. U. S. P.

SULPHUR PRECIPITATUM, U. S. P. Preparation. Its impurities and tests.

LIQUOR CALCII SUPER-SULPHURETI.—Made as in process for precipitated sulphur. Should be kept tight.

POTASSII SULPHURETUM, U. S. P. Preparation. Preservation. Tests.

LIQUOR AMMONIÆ HYDROSULPHATIS. Preparation and uses as a test.

Preparations of Phosphorus.

PHOSPHORUS, U. S. P. Preparation and preservation.

OLEUM PHOSPHORATUM. Preparation and uses in Pharmacy.

ETHER PHOSPHORATUM. Preparation and uses.

Red phosphorus.

Preparations of Iron.

FERRI RAMENTA, U. S. P.

FERRI FILUM, U. S. P.

FERRI PULVIS, U. S. P. Iron reduced by hydrogen. Its preparation from subcarbonate. Tendency to contain black oxide and sulphuret.. Tests of purity. Pills of powdered iron.

FERRI SULPHAS, U. S. P. Preparation. Tests of purity.

Ferri Sulphas Granulata. Dublin Ph.

Ferri Sulphas Exsiccatum. Ed. Ph. Preparations and uses.

FERRI SUB-CARBONAS, U. S. P. Preparation. Composition and tests.

FERRI CARBONAS SACCHARATUM. Ed. Ph. Preparation and composition. Action of sugar as a protective agent.

PIL. FERRI CARBONATIS, U. S. P. Process of Vallet, nearly that of U.S.P. Tendency to crystallize by age. Its deliquescence. Pills if to be kept, must be coated.

PIL. FERRI COMPOSITA, U. S. P. *Blaud's Pills.*

MISTURA FERRI COMPOSITA, U. S. P. Contains hydrated carbonate of iron. Should be kept close.

FERRI PHOSPHAS, U. S. P. Preparation and tests.

Syrupus Ferri Phosphatis, Weigand.

SYRUPUS FERRI ET CALCIS PHOSPHATIS, *Wiegand.* Am. Jour. Ph. vol. XXVII.

SYRUPUS PHOSPHATES COMPOSITUS, Parrish. Am. Jour. Ph. vol. XXIX.

Syrupus Ferri Pyrophosphatis.

FERRI OXIDUM HYDRATUM, U. S. P. Preparation of the Sesqui-sulphate. Precipitation of the oxide. The washing process. To be expressed forcibly if for an antidote in haste. Alteration by age. Its action as an antidote.

FERRUGO, Ed. Pharm. Dried hydrated sesqui-oxide of iron.

FERRI OXIDUM NIGRUM, Ed. Ph.

FERRI SESQUI-CHLORIDI. Preparation and uses.

LIQUOR FERRI CHLORIDI, U. S. P. Officinal process. Sharp's process. Dr. Squibb's process.

Tinctura Bestucheffi.

FERRUM AMMONIATUM, U. S. P. Preparations and tests.

Tinctura Ferri Ammonio-chloridi, Lond. Ph.

LIQUOR FERRI NITRATIS, U. S. P. Officinal process. Procter's process.

SYRUPUS FERRI PROTO-NITRAS. Procter's process. Livermore's process.

Preparations of Manganese.

MANGANESII OXIDUM. Black oxide of manganese. Tests.

MANGANESII SULPHAS. Preparation from the oxide.

MANGANESII CARBONAS.

Pilulæ Manganesii Carbonatis.

Manganesii Phosphas.

Preparations of Zinc.

ZINCUM, U. S. P.

Zinc rendered mossy by pouring it when melted into water.

Distilled Zinc for testing.

ZINCI SULPHAS, U. S. P. Preparation and purification from iron.

Preparations of Iodine.

IODINIUM, U. S. P. Dessication of wet iodine—resublimation.
Iodine water.

TINCTURA IODINII, U. S. P. Effects of age; strength.

TINCTURA IODINII COMPOSITA, U. S. P.

LIQUOR IODINII COMPOSITUS, U. S. P.
Lugol's Solution.
Lugol's Iodine Caustic.

UNGUENTUM IODINII, U. S. P.

UNGUENTUM IODINII COMPOSITUM, U. S. P.

SULPHURIS IODIDUM, U. S. P. Preparation and preservation.

UNGUENTUM SULPHURIS IODIDI, U.S.P.

POTASSII IODIDUM, U. S. P. Process of U. S. P. Its advantages. Baup and Caillot's process (U. S. P. of 1840). Tests of its freedom from iodate and carbonate; other tests.

UNGUENTUM POTASSII IODIDI, U. S. P.
Hydriodated opodeldoc.

SODII IODIDUM. Its preparation and tests.

AMMONII IODIDUM. Preparation and tests of purity.

FERRI IODIDUM, U. S. P. Preparation and tests of quality, and mode of preservation.

LIQUOR FERRI IODIDI, U. S. P. Vel.

SYRUPUS FERRI IODIDI. Its preparation, preservation and tests.

SYRUPUS MANGANESII IODIDI. Preparation by Procter's process, (Am. Jour. Pharm., vol. xxii, p. 300,) Livermore's process.

SYRUPUS FERRI ET MANGANESII IODIDI. Preparation by Procter's process, Am. Jour. Pharm., vol. xxv, page 198.

ZINCI IODIDUM. Preparation, preservation and tests.

SYRUPUS ZINCI IODIDI. Taylor's process for its preparation. Am. Jour. Pharm., vol. xxiv, page 33.

CADMII IODIDUM. Preparation and tests.

HYDRARGYRI IODIDUM, U. S. P. Process by trituration; Boutigny's process; tests of purity; alteration by light.

UNGUENTUM HYDRARGYRI IODIDI. London Pharm.

HYDRARGYRI IODIDUM RUBRUM, U. S. P. Process of U. S. P.; process by trituration.

UNGUENTUM HYDRARGYRI IODIDI RUBRI, Dub. Pharm.

POTASSII IODO-HYDRARGYRAS. Its preparation and tests.

LIQUOR POTASSII IODOHYDRARGYRATIS. See process of A. Smith. Am. Jour. Pharm., vol. xii, page 265.

ARSENICI IODIDUM, U. S. P. Process of U. S. P. by fusion. Uses and tests.

LIQUOR ARSENICI ET HYDRARGYRI IODIDI, U. S. P. Donovan's solution; U. S. P. process. Donovan's process more complex.

ANTIMONII IODIDUM. Preparation and uses. Am. Jour. Ph., vol. xxix, p. 244.

PLUMBI IODIDUM, U. S. P. Preparation and uses.
Unguentum Plumbi Iodidi.

Preparations of Bromine.

BROMINIUM, U. S. P.
Tests of its purity.

POTASSII BROMIDUM, U. S. P. Baup and Caillot's process used in U. S. P. Tests of purity.

FERRI BROMIDUM. Its preparation and tests.

LIQUOR FERRI BROMIDI. Parrish's process. (See Parrish's Prac. Ph.)

Preparations of Cyanogen.

POTASSII FERROCYANURETUM, U. S. P. Its characters and tests of purity. Its preparation on a large scale.

FERRI FERROCYANURETUM, U. S. P. Process for Prussian Blue; tests of its purity; uses in Pharmacy.

ZINCI FERROCYANURETUM. Its preparation uses and tests.

POTASSII CYANURETUM, U. S. P. Made by Liebig's process. Contains cyanate. Process for pure cyanide.

ZINCI CYANURETUM. Preparation and uses.

HYDRARGYRI CYANURETUM. U. S. P. Old process by Prussian blue, officinal. Process by hydrocyanic acid and oxide of mercury better.

ARGENTI CYANURETUM. U. S. P. Made

SODÆ SULPHAS, U. S. P. Tests of purity and process for purifying.

SODÆ NITRAS. Its characters and uses.

SODÆ PHOSPHAS, U. S. P. Preparations, uses and tests of purity.

SODÆ HYPOSULPHIS. Preparation, uses in the arts, and tests.

AMMONIA.

LIQUOR AMMONIÆ, U. S. P. Specific gravity ·960.

LIQUOR AMMONIÆ FORTIOR, U. S. P. Sp. gravity ·882. Preparation, uses, tests of strength and purity.

Linimentum Ammoniæ, U. S. P.

Linimentum Ammoniæ Comp. Granville's Lotion. Its preparation.

SPIRITUS AMMONIÆ, U. S. P. 100 grs. saturate 30 grs. of officinal sulphuric acid.

SPIRITUS AMMONIÆ AROMATICUS, U. S. P. Its preparation. Tests.

AMMONIÆ CARBONAS, U. S. P. Should be translucent when used in medicine.

AMMONIÆ MURIAS, U. S. P. Tests of purity. Uses in pharmacy.

AMMONIÆ NITRAS. Its preparation and uses.

AMMONIÆ SULPHAS. Uses in Pharmacy as a source of ammonia.

AMMONIÆ PHOSPHAS. The neutral phosphate. Its preparation. Its crystallization as a test of purity.

AMMONIÆ HYPOPHOSPHIS. Its preparation, uses and tests.

LIQUOR AMMONIÆ ACETATIS, U. S. P. Its preparation, neutrality and tests.

Alkaline Earths, and Earths.

CALX, U. S. P. Lime for the purposes of pharmacy should be recently burned, and should slake readily.

LIQUOR CALCIS, U. S. P. Its preparation, preservation and tests.

LINIMENTUM CALCIS, U. S. P.

Syrupus Calcis by boiling hydrate of lime in syrup till saturated.

LIQUOR CALCII CHLORIDI, U. S. P.

CALCII CHLORIDUM.

CRETA PRÆPARATA, U.S.P. Preparation and uses.

Mistura Cretæ, U. S. P.

Trochisci Cretæ, U. S. P.

CALCIS CARBONAS PRÆCIPITATUS, U. S. P.

CALCIS PHOSPHAS PRÆCIPITATUM, Dublin Pharm.

CALCIS HYPOPHOSPHIS. Its preparation from lime and phosphorus by boiling. By heat in the dry way. Characters. Tests of purity; uses.

Compound Syrup of Hypophosphites.

MAGNESIÆ CARBONAS, U. S. P. Its preparation and tests of purity.

MAGNESIA, U. S. P. *Calcined magnesia.* Its preparation by calcination. Heavy magnesia. Henry's & Husband's magnesia. Commercial magnesia. Tests of its purity.

LIQUOR MAGNESIÆ SUPER CARBONATIS. *Fluid magnesia.* Carbonate of magnesia dissolved in carbonic acid water.

MAGNESIÆ SULPHAS, U. S. P. Tests of its purity.

BARYTÆ CARBONAS, U. S. P. Its purity and uses.

BARII CHLORIDUM, U. S. P. Its preparation and tests of purity.

LIQUOR BARII CHLORIDI, U. S. P.

ALUMEN, U. S. P. Its purity and tests. Potash alum. Ammonia alum.

Liquor Aluminis Compositus, Lon. Ph. Bates' alum water.

ALUMEN EXSICCATUM, U. S. P. Preparation and tests of purity.

ALUMINÆ SULPHAS. Preparation uses and tests.

ALUMINÆ ACETAS.

Preparations of Chlorine.

CHLORINIUM.

CHLORINII LIQUOR, Dublin Pharm. Its preparation, characters, tests.

CALX CHLORINATA, U. S. P. Its characters and tests of strength.

LIQUOR CALCIS CHLORINATÆ, Dublin Pharm. Preparation and uses.

LIQUOR SODÆ CHLORINATA, U. S. P. Labarraque's solution. Test of strength.

Preparation by U. S. P. process. Fumigating mixture of Guyton de Morveau, with oxide of manganese, chloride of sodium, and sulphuric acid.

The Mineral Acids.

ACIDUM MURIATICUM, U. S. P. Specific gravity 1·16. 100 grs. saturate 91 grs. bicarbonate of potassa, and contains 33 per cent. of dry acid. Its properties and tests of purity.

Acidum Muriaticum Dilutum, U. S. P. 1 part of acid to 3 of distilled water by measure. Specific gravity 1·046.

ACIDUM NITRICUM, U. S. P. Specific gravity 1·42. 100 grs. saturate 111 grs. of bicarbonate of potassa, and contains 60 per cent. of anhydrous acid. Properties and tests of purity.

Acidum Nitricum Dilutum, U. S. P. 1 part to six of water by measure. Sp. grav. 1·07.

Acidum Nitro Muriaticum, U. S. P. 1 part nitric to 2 parts muriatic acid. Nitro-muriatic acid should be of full strength. To be kept cool and in the dark.

ACIDUM SULPHURICUM, U. S. P. Specific gravity 1·845. Contains 80 per cent. of dry acid. Commercial acid about 1·833.

Acidum Sulphuricum Purum, Dublin Pharm. The commercial acid purified by distillation in a glass retort with strips of platina foil to prevent concussions, rejecting the first tenth.

ACIDUM SULPHURICUM DILUTUM, U. S. P. One part of acid to 13 parts of distilled water. Its specific gravity is 1·09. 100 grs. saturate 25 grs. of bicarbonate of potassa. This acid if made from the commercial acid should, after standing, be decanted from any sediment that forms. Why?

Acidum Sulphuricum Aromaticum, U. S. P.

Elixir of Vitriol, Mynsicht's Acid Elixir. Its preparation by U. S. P. process.

Unguentum Acidi Sulphurici.

ACIDUM PHOSPHORICUM, U. S. P. Its composition. Preparation from bones. Preparation from phosphorus. Impurities and tests.

Acidum Phosphoricum Dilutum, Lon. Pharm. Process of London Pharmacopœia. Its preparation from phosphoric acid 1 to 10 parts of water. Specific gravity 1·064. 100 grs. saturate 29 grs. bicarbonate of potassa.

ACIDUM HYPOPHOSPHOROSUM DILUTUM. Its preparation from hypophosphite of lime and oxalic acid. Uses and tests.

ACIDUM HYDRIODICUM. How prepared for medicinal use. Extemporaneously from iodide of potassium and tartaric acids.

ACIDUM CHROMICUM. How prepared from bichromate potassa and sulphuric acid. Avoid contact of organic matter. Uses as a caustic.

Alkalies.

LIQUOR POTASSÆ, U. S. P. Specific gravity 1·056. Solution of potassa is prepared from carbonate of potassa and lime. Should not effervesce with acids. How prepared extemporaneously from potassa. ℥ss to ℥j. of water.

POTASSA, U. S. P. Its preparation from liquor potassæ. Characters and tests of purity.

Potassæ cum Calce, U. S. P. Its preparation and uses.

POTASSÆ ACETAS, U. S. P. Its preparation and tests.

POTASSÆ BICARBONAS, U. S. P. Its preparation and tests of purity.

Salæratus. Its preparation from the gases of burning charcoal.

POTASSÆ CARBONAS, U. S. P. Preparation, characters and tests.

POTASSÆ CARBONAS PURUS, U. S. P. Its preparation from bicarbonate of potassa. From cream of tartar and nitrate of potassa.

POTASSÆ NITRAS, U. S. P. Its tests of purity. Uses. Sal Prunella.

POTASSÆ PHOSPHAS. Its preparation and uses.

POTASSÆ HYPOPHOSPHIS. Its preparation from hypophosphite of lime by means of carbonate of potassa.

LIQUOR SODÆ, Lon. Ph. Tests. Sp. gravity 1·061.

SODA. Its preparation from solution of soda. Tests.

SODÆ CARBONAS, U. S. P. Its characters and tests of purity.

SODÆ BICARBONAS, U. S. P. Its preparation from the carbonate. Tests of purity. Commercial processes.

composition. Its mode of preparation by fermentation of lactate of lime.

Butyric Ether, or pine apple essence. Its properties and preparation.

Syrup of Milk. Its preparation.

Wine whey. Its preparation from coagulated milk.

Rennet. The dried prepared stomach of the calf. Its action on casein attributed to *pepsin*. Mode of preparing pepsin.

Ovum, U. S. P. Eggs are employed in pharmacy as a clarifying agent; for emulsinizing oil; and as a source of protein. Composition of white of egg.

Albumen. Its chemical nature. Effect of heat, acids and alkalies on it.

Protein. Its preparation. Albumen as an antidote; how used.

Yolk of Egg. Its composition and uses in emulsionising oils.

Ol. Morrhuæ, U. S. P. The oil of the liver of Gadus morrhua. The chemical nature of codliver oil, according to de Jongh and Winckler. The absence of glycerin, its place occupied by oxide of propyl. Its pharmaceutical uses; its adulterations, and their recognition.

Ol. Bubulum, U. S. P. *Neat's foot oil*. The oil of the bones of Bos domesticus, prepared by ebullition.

Fel Bovinum Inspissat. The fluid contents of the gall bladder of the ox, evaporated to the consistence of an extract without clarification. The constitution of bile. *Taurin, cholic acid*.

Castoreum, U. S. P. Contains *castorin, volatile oil, resin*, albumen, and sometimes *salicin* and carbolic acid. *Castorin* crystallizes, has the odor of castor, a cupreous taste, and soluble in hot alcohol and the volatile oils. The alleged origin of salicin is willow bark, eaten by the beaver.

Tinctura Castorei, U. S. P. Made by maceration. That of the Codex made one part to five of alcohol.

Tr. Castorei Ammoniata, Ed. Ph. Castor assafœtida and spirits of ammonia. When castor is introduced into pills, avoid the integuments.

Moschus, U. S. P. Contains ammonia, volatile oil, stearin, olein, cholesterin, gelatin, albumen, fibrin, muriate of ammonia, &c. Its chemistry not clearly defined. Its adulterations.

Tincture of Musk.

Mixture of Musk. Triturate the musk with coarse sugar, and then with gum, and when intimately divided, add gradually the water.

Cantharis, U. S. P. *Spanish Flies*. The bodies of Cantharis vesicatoria. They contain cantharidin, a yellow substance giving it solubility, green fixed oil, yellow fixed oil, uric acid, and volatile odorous substance.

Cantharidin. Its external characters. Its solubility in oil, alcohol, ether, sulphuret of carbon, &c. Its volatility, vesicating power, crystalline form, &c. Processes for preparing it.

Preservation of Cantharides. Of the powder. Its hygrometric tendency.

Tinctura Cantharidis.

Ceratum Cantharidis, U. S. P. Process of its preparation. The advantages of continued heat.

Unguentum Cantharidis, U. S. P. Its preparation and use.

Cantharidal Collodion. Its preparation and uses. Why Venice turpentine is added.

Linimentum Cantharidis, U. S. P.

Emplast. Picis C. Cantharide, U. S. P.

Acetum Cantharidis, Lond. and Ed.

Oleum Cantharidis. Codex.

Acetic Extract of Cantharides. Vesicating paper. Vesicating tissue. Spreading of blisters. The importance of rendering them active by a coating of ethereal solution of cantharides applied with a brush.

DRUGS AND PREPARATIONS DERIVED FROM THE MINERAL KINGDOM.

In considering the pharmacy of inorganic chemicals, it might be supposed that a scientific classification would be recommended to the student of pharmacy, but inasmuch as the range of elements which contribute to medicine so directly as to require notice, is by no means co-extensive with the discoveries of chemistry, it has been deemed more useful to classify them in groups with a certain degree of alliance in qualities and characters.

of the root, and the weight made up with alcohol.

Preserved Juice, made by bruising the root, collected in October, and adding ¼ alcohol, macerating for a month; expressing and filtering.

GLYCYRRHIZA, U. S. P. The root of Glycyrrhiza glabra. Liquorice root owes its acrimony to a resin, and its sweetness to *glycyrrhizin*, or liquorice sugar.

Glycyrrhizin, how prepared, its characters, solubility, &c.

EXTRACTUM GLYCYRRHIZÆ, U. S. P. Commercial.

Extract of Liquorice, Tilden's.
Refined Liquorice.
Liquorice Lozenges.
English Liquorice.

LAPPA, U. S. P. Burdock, the root of Lappa minor. Its preparations are made like those of sarsaparilla.

CANNABIS INDICA. Indian hemp.

Extractum Cannabis, U. S. P. The resinous exudation on the stems of Cannabis sativa, grown in the East Indies. The dried hemp tops are extracted with alcohol, but the product varies with the amount of inert matter taken up with the resin by the alcohol. The best is washed with water to remove extractive matter.

Tinctura Cannabi Indicæ, *Dub. Phar.* made with the *purified* extract of Indian hemp.

VANILLA. The prepared pod of Vanilla aromatica. The odorous principle of vanilla has not been well studied, but is, probably, analogous to *Coumarin.*

Powder by trituration with sugar.
Tincture with diluted alcohol.
Fluid Extract by extraction with diluted alcohol, and evaporation after adding simple syrup, till most of the alcohol is evaporated, and then add syrup and alcohol to make measure, using an ounce of vanilla to a pint of fluid extract.

TOXICODENDRON, U. S. P. Leaves of Rhus toxicodendron, or poison oak. Contains, according to a recent analysis, a poisonous volatile alkaloid.

Tinctura Toxicodendri.

Drugs derived from the Animal Kingdom.

Gelatin. The skin, tendons, ligaments, and gelatinous tissues of bones, though insoluble in cold water, yield to that fluid when boiled in it a soluble matter which is called gelatin.

Cooper's gelatin, or ossein. Prepared from bones and other gelatinous portions of animals. Bones yield from 37 to 44 per cent.

ICHTHYOCOLLA, U. S. P. Isinglass is the purest form of gelatin, and exists in the air bladder of fishes. The chemical nature of gelatin. Its ultimate composition. Action of acids and alkalies on it. Tests. Characteristics of pure gelatin. Russian isinglass. Refined isinglass. Gelatin plaster. How prepared. Court plaster. Goldbeater's skin. Its preparation. Gelatin as a clarifying agent.

MILK. The milk of animals is a natural emulsion, in which butter is suspended in an aqueous liquid by means of casein and albumen. It contains lactin and saline matters.

Butter. The fatty portion of milk exists naturally in exceedingly small globules, enveloped in caseous envelopes. By standing, they rise to the surface, and are *cream;* and when this is exposed to the process of churning, these sacks are ruptured, the butter escapes, and the particles coalesce and form a mass, which is butter.

Composition of Butter. Its uses in pharmacy.

Casein. Its coagulability by acids and rennet. Products of its decomposition by alkalies. Its excitant action on milk as a ferment. Its composition.

Lactin. Its characters and composition. Its ready conversion into lactic acid by fermentation. Its solubility.

Lactic Acid. Its general characters; specific gravity; solubility; composition and tendency to form crystallizable salts.

Bensch's Process for making lactic acid for commerce. Preparation of the lactates of lime, zinc and iron.

Butyric Acid. Its general characters; solubility; specific gravity and

tannin. Its tests. Processes for making digitalin; Homolle's, Henry's. Water and diluted alcohol are good menstrua.

Powder. The importance of having it good.

Infusum Digitalis, U. S. P.

Tinctura Digitalis, U. S. P.

Extractum Digitalis. 1. From expressed juice. 2. From tincture. The last is the most active. Preserved juice of digitalis.

Granules of Digitalin, 1-50th gr. in each.

SCILLA, U. S. P. The bulb of S. maritima. The activity due to Scillitin, which exists in small quantity, and is intensely bitter; it also contains a volatile acrid principle when fresh.

Diluted acetic acid and diluted alcohol best menstruæ for its extraction.

Powder. Very deliquescent, owing to the sugar it contains.

Acetum Scillæ, U. S. P.

Tinctura Scillæ, U. S. P.

Syrupus Scillæ, U. S. P.

Oxymel Scillæ, U. S. P.

ERGOTA, U. S. P. The diseased seed of Secale cerale, or rye. Winckler has shown it to contain *Secalin*, (propylamin) united with ergotic acid, red coloring matter, albumen, fatty oil, fungus sugar, formiates and phosphates.

Secalin. How obtained. Its nature and existence in other bodies.

Ergotin of Bonjean. Merely an alcoholic extract of the aqueous extract. Process of making it. Is deliquescent.

Oil of Ergot. When pure has the composition of *ricinolein*, and its acid that of ricinoleic acid, according to T. R. Baker, of Richmond.

Powder. Deteriorates by keeping. Should be made in small quantity. Preservation of ergot.

Vinum Ergotæ, U. S. P.

Tinctura Ergotæ.

Syrupus Ergotæ. Infusion.

Fluid Extract of Ergot. Made by treating 8 oz. of ergot first with ether, and drying; and then with acetic diluted alcohol, and evaporating to 6 fluid oz., then adding 2 fluid oz. of alcohol, and filtering. Weak alcohol is the best menstruum.

MEZEREUM, U. S. P., is the bark of Daphne gnidinum, and mezereum; owes its activity to a semi-fluid resinous matter, not yet well understood.

Unguentum Mezerei, U. S. P. Mode of preparing the bark to render it readily extractable.

Ethereo-Alcoholic Extract is very active.

Oleum Mezerei made like the ointment, substituting oleum olivæ.

SPIGELIA, U. S. P., is the root of Spigelia Marilandica. R. H. Stabler found its activity to be due to a bitter uncrystallizable, neutral, deliquescent principle. It also contains volatile oil, tannin, &c.

Infusum Spigeliæ, U. S. P. Called *worm tea* when associated with Senna, aromatics, &c.

Fluid Extract, ℥xvi. to Oj. Menstruum diluted alcohol.

Extractum Spigeliæ et Sennæ fluidum, U. S. P.

ARNICA, U. S. P. Flowers of A. montana. They contain *Arnicin* of Bastick.

Tinctura Arnicæ.

Emplastrum Arnicæ.

Lactuca sativa, garden lettuce. Yields, when its stalks are wounded, a milky juice, which when dry is

LACTUCARIUM, U. S. P. Contains lactucin, lactucic and caoutchouc acid.

Tinctura Lactucarii. Diluted alcohol, a good menstruum. Chloroform removes from it the caoutchouc, and the residue is then easily miscible with water.

TARAXACUM, U. S. P. The root of Taraxacum dens leonis. Extensively cultivated for making extract. Contains taraxacin, gum, resin, inulin, &c.

Infusum Taraxaci, U. S. P.

Extractum Taraxaci, U. S. P. This is the unexpressed juice of the roots, dried with a gentle heat or in vacuo. Effect of heat to destroy bitterness; all extracts made by boiling roots in water are thus injured.

Tilden's extract, Shaker's extract. Thayer's extract, all prepared in vacuo.

Fluid Extract, ℥j. to f.℥j. The dried root, ground macerated and displaced with weak alcohol. Evaporated to ¼ wt.

Its relation to metallic oxides and the alkalies.

Composition and formulæ. Theories of its constitution; Wetherill's, Mulder's, Strecker's. Preparation by Pelouze's method. By Leconnet's method. Methods of drying tannin.

Acidum gallicum, U. S. P. Its characters and relations to tannic acid; tests for distinguishing it. U. S. P. process for making gallic acid. Dublin Pharm process. Scheele's process. Pharmaceutical uses.

Pyro-gallic acid. Its chemical characters and qualities; mode of preparation.

Infusum Gallæ, *Tinctura Gallæ*, U. S. P. *Unguentum Gallæ*, U. S. P. Aqueous extract of galls, a substitute for tannin. Aromatic syrup of galls. Am. Jour. Pharm, vol. xxvii, p. 416.

Catechu, U. S. P. Aqueous extract of the wood of Acacia catechu. Its chief constituent, *mimo-tannic acid.* Mimo-tannic acid contains less oxygen than gallo tannin by 4 eq., and rapidly alters in solution.

Catechuic acid also exists in it.

Infusum Catechu, compositum, U. S. P.

Tinctura Catechu, U.S.P. The aqueous and alcoholic preparations of catechu lose their astringency by the action of the air, though more slowly than those of kino.

Kino, U. S. P. The inspissated juice of several plants, constituted like catechu, with a peculiar *kino-tannic acid*, very prone to change by oxygen.

Tinctura Kino, U. S. P. Its tendency to gelatinize.

KRAMERIA, U. S. P. Root of K. triandra. It contains a tannin analogous to catechu tannin, a peculiar acid, gum, fecula, and much altered tannin or apothegm. In treating Krameria with water the apothegm may be avoided by using it cold, but hot water and alcohol dissolves it.

Infusum Krameriæ, U. S. P.

Tinctura Krameriæ, U. S. P.

Extractum Krameriæ, U. S. P. This is a cold watery extract, and should contain but 1 or 2 per cent of insoluble matter.

Alcoholic Extract much more insoluble. Why? How remedied?

Syrupus Krameriæ, U. S. P. Is made from extract (U. S. P.) and from the root direct.

QUERCUS ALBA, AND TINCTORIA, U. S. P. Oak bark contains a tannin closely analogous, if not the same with gall tannin,—and the Q. tinctoria a peculiar coloring matter Quercitrin.

Decoct. Quercûs albæ, U. S. P.

HÆMATOXYLON, U. S. P. Wood of H. Campechianum contains a tannin analogous to oak tannin, and a coloring matter hæmatin, which crystallizes.

Decoctum Hæmatoxyli, U. S. P.

Extractum Hæmatoxyli, U. S. P. By boiling in water.

CHIMAPHILA, U. S. P., is the herb of C. umbellata. Contains tannin, (probably gallic acid) resin, gum, and bitter extractive. It may contain a diuretic principle. Weak alcohol and water are proper menstrua.

Decoctum Chimaphilæ, U. S. P.,

Syrupus Chimaphilæ.

Fluid Extract of Chimaphila.

UVA URSI, U. S. P. Leaves of Arctostaphylos Uva Ursi, or Bearberry. It contains tannin, gallic acid, arbutin, and less important ingredients. Water and weak alcohol are the proper menstrua. The tannin not injured by decoction.

Decoctum Uva Ursi.

Fluid Extract of Uva Ursi.

ROSÆ GALLICÆ, U. S. P. The petals of the red rose contain, tannin, gallic acid, volatile oil, and red coloring matter.

Infusum Rosæ Comp., U. S. P., *Mel. Rosæ*, U. S. P., *Confectio Rosæ*, U. S. P.

The various indigenous astringents as Geranium, Diospyros, Statice, Rhus glabrum and Rubus, though not noticed, should come under this head.

Unclassed Drugs not readily grouped with the preceding.

DIGITALIS, U. S. P., is the second year's leaf of Digitalis purpurea. Digitalis contains digitalin, volatile oil, tannin, gallic acid, red and green coloring matter, and digitalic acid.

Digitalin is a white neutral intensely bitter principle; excites sneezing; contains no nitrogen,—is very insoluble in water when pure, and precipitable by

medicinally like jalapin. Its preparation and characters.

Extractum Podophylli, U. S. P.

ALOES, U. S. P. The prepared juice of Aloe spicata and Aloe socotrina. It owes its properties to a peculiar principle called *aloin*, discovered by T. and H. Smith, of Edinburgh.

Preparation of Aloin. Its appearance, solubility and chemical characters; relation with the alkalies. Yields crysamic acid by the action of nitric acid. Its relations to heat and air.

Chemical composition of aloin.

Pharmaceutical preparations of Aloes.

Decoct. Aloes Comp., Lond. Pharm.

Tinctura Aloes, U. S. P.

Vinum Aloes, U. S. P.

Tinctura Aloes et Myrrhæ, U. S. P.

Tinctura Rhei et Aloes, U. S. P.

Pilulæ Aloes, U. S. P.

Pilulæ Aloes et Myrrhæ, U. S. P.

Pilulæ Aloes et Assafœtidæ, U. S. P.

Pulv. Aloes et Canellæ, U. S. P.

Action of soap and the alkalies on aloes in its medical relations.

JUGLANS, U. S. P. The bark of the root of J. cinerea.

Extrdctum Juglandis, U. S. P.

Drugs having an Active Principle Analogous to Saponin.

SAPONARIA OFFICINALIS. Virtues due to saponin; its characters; it is not crystallisable; renders water frothy by agitation; converted into esculic acid by hydrochloric acid. Its chemical formula.

Preparations not officinal. Diluted alcohol and hot water extract its virtues.

Decoction. Hydro-alcoholic Extract. Syrup. Fluid Extract.

SENEGA, U. S. P. Seneka snake root is derived from the Polygala senega. Analyzed by Quevenne, it yielded polygalic acid, virgineic acid, pectic acid, tannic acid; gum, albumen and fixed oil.

Polygalic Acid. The active principle. Its characters; taste. Causes sneezing. Is the source of the frothing in senega preparations. Its solubility, &c.

Preparation from alcoholic tincture. It may be used instead of seneka.

Decoctum Senegæ, U. S. P. Infusion by cold displacement may be substituted.

Syrupus Senegæ. Diluted alcohol is the best menstruum for this syrup. ℥iv. to Oj.

Fluid Extract by diluted alcohol; ℥j. f.℥j. Keeps best with weak alcoholic menstruum.

Syrupus Scillæ Comp., U. S. P. Diluted alcohol, best menstruum.

Extract. Senegæ. With diluted alcohol.

SARSAPARILLA, U. S. P. Root of Smilax officinalis and other species Chemistry of sarsaparilla has attracted much attention. Its constituents are chiefly sarsaparillin, volatile oil, bitter resin, extractive matter, and starch.

Sarsaparillin is a crystalline body. Neutral, acrid, and colorless. Froths in solution by agitation. Process of making it is difficult. Diluted alcohol the best menstruum for its extraction.

Infusum Sarsaparillæ, U. S. P.

Decoctum Sarsaparillæ Comp. U. S. P.

Syrupus Sarsaparillæ Compositus, U. S. P.

Syrupus Sarsaparillæ, (Simplex). London Pharm. Codex from extracts.

Extractum Sarsaparillæ, U. S. P.

Extractum Sarsaparillæ, fluidum. U. S. P. In making the preparations of sarsaparilla, it is desirable to avoid excessive heat.

MONESIA is the extract of the bark of Crysophyllum glycyphyllum, of Brazil. Contains tannin, monesin, and glycyrrhizin. *Monesin* is analogous to saponin.

QUILLAIA SAPONARIA of Chili. Bark possesses strong soapy qualities, and contains a principle like saponin.

Asparagus root also belongs to this class of drugs, and is used in France as an alterative like sarsaparilla.

Astringent Drugs owing their activity to some variety of Tannic acid.

GALLA, U. S. P. Nutgalls are an excrescence found on Quercus infectoria, resulting from the wound of an insect.

Contain *tannic, gallic and ellagic acids.* Pectin, pectase, gum, starch and sugar.

Acidum Tannicum, U. S. P. Its amorphous condition; pure astringency solubility; acid character not strong; precipitated by all the organic *alkaloids*:

Tinctura Sennæ.

Tinctura Sennæ et Jalapæ, U. S. P.

Confectio Sennæ, U. S. P. Lenitive electuary. Advantage of making the pulps altogether. Smoothness essential.

RHAMNUS CATHARTICUS, L. P. The berries of R. catharticus contain rhamnin, acetic acid, mucilage and a purgative extractive matter.

Syrupus Rhamni, Lond. Ph. Made from the expressed juice; clarified by partial fermentation, an equal weight of sugar added, and evaporated till of proper consistence.

RHEUM, U. S. P. The dried root of R. palmatum and other species. The chemistry of rhubarb not yet clearly made out. Several well defined principles discovered, as erythroretin, phæoretin, aporetin, crysophanic acid, oxalate of lime, tannin, gallic acid. Source of purgative power not clearly decided. Diluted alcohol the best menstruum. Water, by aid of other ingredients, takes up the resinous principles partially.

Infusum Rhei, U. S. P.

Syrupus Rhei, U. S. P. Diluted alcohol the best menstruum.

Syrupus Rhei Aromaticus, U. S. P. Avoid much heat with all the preparations of rhubarb in which its aid is needed.

Extractum Rhei, U. S. P.

Extractum Rhei Fluidum, U. S. P.

Tinctura Rhei et Gentianæ, U. S. P.

Tinctura Rhei et Aloes, U. S. P.

Tinctura Rhei et Sennæ, U. S. P.

Vinium Rhei, U. S. P.

Extractum Rhei et Sennæ, U. S. P., *Torrified rhubarb* of old pharmacy.

Study the subject of rhubarb closely, in reference to solvents and effects of heat.

COLOCYNTHIS, U. S. P. The interior pulpy part of the fruit of Citrullus colocynthis. Chemistry of colocynth not well defined.

Colocynthin, a bitter resinoid body, is considered the active principle; has not been obtained pure. The pulp also contains pectic acid, gum, and the seed much fixed oil, but no colocynthin.

Powder. This should not contain seeds. Dry the pulp well, and immediately pulverize it.

Tinctura Colocynthidis, U. S. P.

Extractum Colocynthidis.

Extractum Colocynthidis Compositum, U. S. P. Ratio of pulp to seed, one to four, average. Maceration and pressure best. Dissolve aloes and soap in tincture and strain; the scammony in powder to be added at the termination of the process, just before the cardamom.

Dr. Squibb's analysis of this compound extract.

Dr. Squibb's formula for the dry compound extract colocynth. (See Amer. Journ. Pharm., v. xxix. p. 97.)

Elaterium, U. S. P. A peculiar substance deposited from the juice of the fruit of Momordica elaterium.

1. Preparation of Clutterbuck's elaterium, from the clear juice without pressure.

2. Preparation from expressed juice by deposition.

3. Inspissated expressed juice.

Elaterin. Its preparation and characteristics.

HELLEBORUS, U. S. P. Root of Helleborus niger. Contains volatile oil, bitter resin, volatile acid, fixed oil and wax.

Tinctura Hellebori, U. S. P.

Extractum Hellebori, U. S. P., with diluted alcohol.

JALAPA, U. S. P. Tuberous root of Ipomea jalapa, of Mexico. Contains active resin, insoluble in ether, soft resin, sugar, starch, gum and lignin.

Resina Jalapa. Mode of preparation as a medicine. Pure jalap resin or Jalapine. Its chemical characters as Rhodeoretin. Tests of its genuineness.

Tinctura Jalapæ, U. S. P.

Extractum Jalapæ. Exhausted first with alcohol and then with cold water. Necessity of getting the resin all out, and of avoiding the starch by using *cold* water.

Alkaline Extract of Jalap. An alcoholic extract of jalap with carbonate of potassa.

Fluid Extract of Jalap. (See Amer. Jour. Pharm, vol. xxix, p. 108.) Resin preserved in solution by an alkaline carbonate.

PODOPHYLLUM, U. S. P. Root of P. peltatum. Contains podophyllin, starch, volatile oil, &c.

Podophyllin is a resinoid substance but partially soluble in ether, and

Bebeerin. Its composition, properties and mode of preparation.

Many other plants of greater or less value contain organic alkalies, but as these have not been closely studied, or much used in medicine, they will be passed over, as Hydrastis Canadensis, Gelseminum sempervirens, Corydalis formosa, &c.

Drugs owing their activity to bitter neutral principles or bitter extract.

ANGUSTURA, U. S. P., is the bark of Galipea officinalis. Contains cusparin, volatile oil, resin and extractive.

Cusparin. Its characters and chemical relations, solubility, &c.

Infusum Angusturæ, U. S. P.

Tinctura Cuspariæ. Ed. Pharm.

SALIX. *Willow bark*, U. S. P., is the product of Salix alba. It contains salicin, corticin, tannin, pectic acid, gum, sugar, &c.

Salicin. Its characters and crystallization; composition; solubility in water and alcohol; action of nitric acid on it; of bichromate of potassa and sulphuric acid; emulsin by fermentation yields *Saligenin.*

Mode of preparation from willow bark. Merck's process. Erdman's process.

APPLE TREE BARK.

Phloridzine is a bitter principle in apple tree bark. Its chemical relations with salicin. Its properties, composition and uses.

PAREIRA BRAVA. The root of Cissampelos pareira. Its bitterness due to cissampelin. The infusion and fluid extract are used.

COLOMBA, U. S. P. The root of Cocculus palmatus. It owes its virtues to columbin and berberin; the latter gives it color. It also contains much *starch* and *gum.*

Columbin. Its crystallisation and other characters. Discovered by Wittstock.

Infusum Colombæ, U. S. P.

Tinctura Colombæ, U. S. P. The extract is best prepared by diluted alcohol.

QUASSIA, U. S. P. Wood of Quassia excelsa. It contains *quassin*, chloride of sodium, nitrate of potassa, gum, extractive, &c.

Quassin. Its characters. Composition. Mode of preparation.

Infusum Quassiæ, U. S. P.

Tinctura Quassiæ, U. S. P.

Extractum Quassiæ, U. S. P. By displacement with cold water.

GENTIANA, U. S. P. Root of G. lutea. It contains volatile oil, gentisin, gum fixed oil, sugar, pectic acid, &c.

Gentianin of Dr. Dulk. Its properties.

Infusum Gentianæ compositum, U. S. P.

Extractum Gentianæ, U. S. P.

Syrupus Gentianæ, from the extract, (℥ij. extract to Oj. syr.)

Tincturæ Gentianæ Comp., U. S. P.

Vinum Gentianæ. Edinburgh Pharm.

Other bitter tonic drugs.

CASCARILLA, U. S. P.

EUPATORIUM, U. S. P.

CORNUS FLORIDA, U. S. P.

MARRUBIUM, U. S. P.

SABBATTIA, U. S. P.

CHIRETTA, London Pharm.

CENTAURIUM. Pharmacy of the same general character as that of gentian.

Cathartic, Resinous and Extractive Drugs.

CASSIA FISTULA, U. S. P. Its constituents.

Cassiæ Fistulæ Pulpa, U. S. P. Its mode of preparation and uses; amount yielded.

TAMARINDUS, U. S. P. The preserved fruit of Tamarindus Indica, deprived of outside of capsule. Contains citric, tartaric and malic acids, pectin, &c.

Tamarindi Pulpa, U. S. P. Preparations and uses.

PRUNUM, U. S. P. Fruit of Prunus domestica, dried.

Pruni Pulpa, U. S. P. Preparation and use.

SENNA, U. S. P. The leaves of Cassia acutifolia, C. obovata, and Cassiæ elongata. Chemistry not well understood.

Cathartin. Its indefinite character. Pharmaceutical preparations of senna.

Infusum Sennæ, U. S. P. Influence of heat and air on a solution of senna. The advantages of the vacuum pan.

Extractum Sennæ Fluidum, U. S. P.

CONIUM, U. S. P. Leaves and seeds of Conium maculatum. The leaves contain *conia*, *coniic acid*, volatile oil, resin and chlorophylle. The seeds contain much more conia and volatile oil, and also fixed oil.

Conia Its alkaline properties. Contains no oxygen. Is an oily fluid. General characters. Tests. Affected by air. Composition. Used in medicine.

Prepared by distilling the seeds (bruised) with liq. potassæ, diluted.

Powdered leaves should be renewed annually.

Tinctura Conii, U. S. P.

Alcoolature, or preserved juice, is a good preparation.

Ethereal Tincture.

Extractum Conii, U. S. P. The carefully evaporated, expressed and depurated juice.

Extractum Conii alcoholicum, U. S. P.

Oleum Conii per infusum. Codex.

Unguentum Conii. Dublin Pharm.

Emplastrum Conii. By the process for Emp. Bellad.

LOBELIA INFLATA, U. S. P. Contains *Lobelina, Lobelic acid, resin, chlorophylle and volatile oil.* The seeds contain most *Lobelina* and 30 per cent. of fixed oil.

Lobelina. Its alkaline character. Its peculiar sensitiveness to heat. Properties. Tests. Preparation.

Tinctura Lobeliæ. U. S. P. From the leaves.

Acetum Lobeliæ, from the leaves.

Syrupus Lobeliæ, ex. acetum; ℥vi. to ℥xii of the syrup.

Extract. Lobelia Aceticum. From the seeds.

Fluid Extract of Lobelia. Ounce for ounce; from leaves.

LOBELIA CARDINALIS, U. S. P. Not much used.

LOBELIA SYPHILITICA.

IPECACUANHA, U. S. P. The root of Cephælis ipecacuanhæ. It contains *emetia, starch, gum, wax, odorous fatty matter, extractive and ipecacuanhic acid*, (mistaken for gallic acid.)

Emetia. Discovered by Pelletier in 1817. Its general characters. Solubility. Tests. Its *preparation* and composition.

Powder of Ipecac. Importance of its careful preparation.

Syrupus Ipecacuanhæ. U. S. P. Menstruum diluted alcohol.

Vinum Ipecacuanhæ, U. S. P.

Trochisci Ipecacuanhæ, U. S. P.

Brown Emetia of the French, is the watery extract prepared from the alcoholic extract.

Fluid Extract of Ipecacuanha.

SANGUINARIA, U. S. P. *Blood Root* is the Rhizome of S. Canadensis. It contains *Sanguinarina* (Sanguinarin a red resin) a principle analogous to *porphyroxin* and other less important substances. Its acid not yet investigated.

Sanguinarina. Its properties, composition and *preparation by Dr. Scheil's process.* Discovered by Dr. Dana, of New York. It forms interesting saline combinations.

Tinctura Sanguinariæ, U. S. P.

Acetum Sanguinariæ.

Syrupus Sanguinariæ. Made with the vinegar of blood root.

COCCULUS, Ed. Ph. *Fish berries.* Fruit of *Anamirta Cocculus.* Cocculus Indicus contains *Picrotoxin menispermia*, paramenispermia, *fixed oil*, &c.

The *picrotoxin* or *picrotoxic acid*, as it is called, is the poisonous principle of this drug. Its characters and composition. It exists in kernel. Mode of preparation.

Menispermia. Properties and composition; exists only in the shell.

Unguentum Cocculi. Ed. Ph.

COFFEA. The kernel of the berry of Coffea Arabica. Coffee contains caffein, caffetannic acid, caffeic acid, a *concrete* and a *fluid* volatile oil, gum, &c.

Caffein. Its characters, solubility, composition and mode of preparation. Discovered by Runge and Robiquet. Versmann's process. Caffein unites with acid, but possesses very weak basic powers.

Caffeic acid. Analogous to kinic acid, and like that acid yields kinone by distillation with peroxide of manganese and sulphuric acid.

NECTANDRA RODEI. Bebeeru bark is derived from this plant. Bebeeru bark contains bebeerin and siperin, two alkaloids possessing anti-periodic properties.

pulsatilla ; is analogous to delphinium and aconitum.

Stramonium, U. S. P. Leaves, roots and seeds. This plant owes its activity to daturia, in the form of an acid malate, which salt exists in the leaves and seeds also. The seeds contain much fixed oil, and dark coloring matter, bassorin, sugar, and resin.

Daturia. Its characters, solubility, and tests. Discovered by Brands ; process for isolating it from the seeds.

Extractum Stramonii fol. U. S. P.

Unguentum Stramonii, (from the extract.) U. S. P.

Unguentum Stramonii, (from the recent leaves,) U. S. P., 1840.

Tinctura Stramonii, U. S. P. From the seed.

Extractum Stramonii Seminis, U.S.P.

Belladonna, U. S. P. The leaves of Atropa belladonna. The roots and seeds though not officinal in the U. S. P. are strongly impregnated with the active principles.

Malate of Atropia, resin, wax, starch, albumen and chlorophylle are the chief ingredients.

Atropia. Its characters, tests, and mode of preparation from the roots of belladonna, by Mein's process. Atropia is alleged to be identical with daturia.

Salts of Atropia. Sulphate and *Muriate.* Solutions of atropia for collyria.

Tinctura Belladonnæ, U. S. P.

Alcoolature, or preserved juice, is also a tincture.

Extractum Belladonnæ, U.S.P. From expressed juice depurated from chlorophylle.

Extractum Belladonnæ Alcoholicum. U. S. P.

Unguentum Belladonnæ, U. S. P. From the extract.

Emplastrum Belladonnæ, U. S. P. From the extract. For this purpose, the extract should be free from chlorophylle, if from the juice ; or else it should be the alcoholic extract.

Hyoscyamus, U. S. P. Leaves and seeds of Hyoscyamus niger. These owe their activity to an alkaloid, Hyoscyamia united, probably, with malic acid. The seeds contain 24 per cent. of fixed oil.

Hyoscyamia. Its properties, tests and composition. According to Garrod, the alkaloids of the Solaneæ are decomposed by caustic potash, which should not be dispensed with them. Hyoscyamia is little known and difficult to obtain.

Tinctura Hyoscyami, U. S. P.

Alcoolature, or preserved juice.

Extractum Hyoscyami, U. S. P. From the expressed depurated juice. Leaves should be gathered about the first of August. Tilden's extract of hyoscyamus.

Extractum Hyoscyami Alcoholicum, U. S. P. From the dried leaves ; is an active preparation.

Dulcamara, U. S. P. Stalks of Solanum dulcamara contain solania, dulcamarin, resin, wax, starch, and extractive.

Solania, discovered by Desfosses. Its characters and composition, mode of preparation. Exists in the potato.

Decoctum Dulcamaræ, U. S. P.

Extractum Dulcamaræ, U. S. P. Cold water, but better by diluted alcohol.

Syrupus Dulcamaræ, made with diluted alcohol.

Fluid Extract made ℥j. to f.℥j., is made with diluted alcohol.

Tabacum, U. S. P. The prepared leaves of Nicotiana tabacum. Tobacco of commerce contains *malate nicotina, nicotianin, extractive, chlorophylle altered by fermentation, citrate and malate of lime, glutin, starch*, and salts of ammonia.

Nicotina. Exists ready formed in the leaves, but Gregory thinks it is much increased in quantity by fermentation. Others assert that this fermentation destroys part of the nicotina.

Nicotina. Its poisonous power. Strong alkaline character. Contains no oxygen. General properties. Tests in analysis. Schlossing's mode of preparation.

Nicotianin. A *volatile stearoptene.*

Infusum Tabaci. U. S. P.

Vinum Tabaci. U. S. P.

Ungt. Tabaci. From fresh tobacco leaves. Allinson's ointment of acetic extract.

Oleum Tabaci, U. S. P. By destructive distillation.

Nicotina might be used medicinally.

extract contains much fixed oil, which should be separated.

BEANS OF ST. IGNATIUS. These seed contain strychnia and brucia, and perhaps igasuria, and also igasuric acid. They are considered stronger than the nux vomica, and afford a tincture and extract made with the same proportions as those of nux vomica.

SABADILLA, U. S. P. The fruit of Asagræa officinalis, of Mexico. It contains *veratria, sabadillina, gallic acid, cevadic acid, veratrin* or helonin, gum bassorin, and fixed oil.

Veratria, U. S. P. Discovered by Pelletier and Caventou. Its characters and chemical composition. Tests of purity, and chemical tests. Process of preparing—U. S. Pharm. Beatson's process.

Pharmaceutical preparations of Veratria.

Tincture of Veratria, grs. iij., to ℥j. according to Majendie, is equal to Tr. Colchicum.

Unguentum Veratriæ.

Sabadillina. Its reality doubted.

Veratrin, or resin of veratria.

Tincture of Sabadilla, (lb.ss. to Oj.)

VERATRUM ALBUM, U. S. P. The cormus of white hellebore contains *veratria* and *jervina.*

The characters of jervina.

Decoctum Veratri albi.

Vinum Veratri albi, U. S. P.

Unguentum Veratri albi, U. S. P.

VERATRUM VIRIDE, U. S. P. This drug has been shown to contain veratria by Worthington and Richardson. It is used in the form of tincture, suggested by Dr. Norwood, ℥ss. to f℥j.

COLCHICUM. The cormus and seeds of *C. autumnale.* The former contains *gallate of colchicia, gum, fatty matter, a volatile acid*, and *inulin.*

Colchicia. Its characters as developed by John K. Carter. Different from Geiger's results. Does not excite sneezing like veratria. Colored violet blue by nitric acid. Other tests, composition, mode of preparation, &c.

Vinum Colchici Radicis, U. S. P. Made by maceration and displacement.

Vinum Colchici Rad. Recentis. Opinion of some physicians in favor of its greater activity.

Acetum Colchici, U. S. P.

Extract Colchici Aceticum, U. S. P.

Vinum Colchici Seminis, U. S. P. With bruised seeds.

Tinctura Colchici Seminis, U. S. P.

ACONITI FOLIA, U. S. P.

ACONITI RADIX, U. S. P. Both the leaves and roots of Aconitum napellus are recognized by the U. S. P. They owe their activity to *Aconitia*, which exists in combination with aconitic acid in the leaves, and probably malic acid in the roots. The leaves also contain a volatile *acrid principle. Aconitate of lime, albumen* and *green wax.*

Aconitia. Its characters, solubility, alkalinity, and tests. Its composition, and mode of preparation from the roots.

Root of Aconitum ferox, the best source. Headland's process best. The greater comparative solubility of aconitia in water, renders it necessary to use concentrated liquors for precipitating.

External use of Aconitia as an ointment.

Aconitic Acid. Its characters. Derivation from citric acid.

Pharmaceutical preparations of Aconite.

Tinctura Aconiti Foliorum, U. S. P.

Tr. Aconiti Radicis, U. S. P. When tincture of aconite is prescribed without the kind being designated, the apothecary should give that of the leaves.

Linimentum Aconiti, (Procter's.)

Extract. Aconite fol. U. S. P. Inspissated clarified juice.

Extractum Aconiti Alcoholicum. U. S. P.

Extractum Aconiti Radicis.

Emplast. Aconiti Radi. (Procter's) All of the preparations of aconite should be dispensed with caution.

DELPHINIUM, U. S. P. Seeds of D. consolida; the seeds of D. staphysagina, also used. Both contain *delphinia, gallic acid, fixed oil*, and *volatile oil.*

Delphinia. Its characters, composition, and tests. Used externally in ointments.

PULSATILLA. The root of Anemone

Preparation of sulphate of morpha.
Morphiæ Murias, U. S. P.
Preparation and tests.

Liq. Morphiæ Hydrochloritis. Ed. L. and D.

Morphiæ Acetas, U. S. P. Preparation and tests.

Liquor Morphiæ Acetatis. London Pharm.

Liq. Morph. Acetatis, Dub. Pharm.

Nitrate of Morphia. Preparation and tests.

Valerianate of Morphia. Preparation and tests.

Hydriodate of Morphia. Preparation.

CODEIA. Discovered by Robiquet in 1832. Its relation to morphia in composition. Its chemical characters, solubility, tests and uses. Ultimate composition. Preparation, &c.

Salts of Codeia. Sulphate and nitrate.

Narcotina. Discovered by Derosne, 1803. Characters, solubility, and tests. Its existence partially in a free state. Chemical composition.

Thebaina. Its characters and tests.

Papaverina. Its characters and tests.

Opiania. Its characters and tests.

Narcein. Its characters, &c.

Meconin. Its characters, &c.

Meconic Acid. Discovered by Sertuerner. Its characters and solubility. Its tests and value as a means of detecting opium.

The medico-legal, or chemico legal history of opium should be studied by the apothecary, so far as to be able to readily detect opium, morphia, and meconic acid, and to distinguish the latter from other alkaloids and acids.

Pharmaceutical Preparations of Opium.

Distilled Water of Opium.

Aqueous Infusion. For extract.

Extract Opii, U. S. P.

Extractum Opii. Denarcotata.

Acetum Opii, U. S. P.

Acetum Opii, or old black drop.

Tinctura Opii Acetata, U. S. P.

Tinctura Opii, U. S. P. Laudanum. Its preparation and causes of variation.

Elixir of Opium. Procter's process with ether.

Tinctura Opii Camphorata, U. S. P.

Tinctura Opii Ammoniata, Ed. Ph.

Pulvis Ipecac et Opii, U. S. P.

Liquor Doveri of Dr. Coleman. (Am Jour. Pharm. vol. xxvi, p. 220.)

Pilulæ Opii, U. S. P.

Confectio Opii, U. S. P.

Trochisci Ipecac et Opii, U. S. P.

Emplastrum Opii, U. S. P.

Roasted Opium.

PAPAVER, U. S. P. Capsules of P. somniferum, of full size, but collected green. Composition. Seed not employed medicinally.

Syrupus Papaveris. Is best made with an alcoholic menstruum.

NUX VOMICA, U. S. P. Are the seeds of Strychnos nux vomica. They contain strychnia, brucia, and igasuria, combined with igasuric acid; concrete oil, yellow coloring matter, gum, starch and bassorin.

Strychnia. Discovered by Pelletier and Caventou, 1818. Its characters and crystallization. Its solubility and chemical composition. Its relations to quinolina.

Tests for Strychnia, chlorine water, tannin, sulphocyanide of potassium, sulphuric acid and bichromate of potassa. Chloride for gold.

Dr. Hall's frog test.

Preparation of Strychnia by U. S. P. process—Molyn's process. Separation of brucia by diluted alcohol.

Sulphate of Strychnia, its solubility, and chemical composition.

Nitrate of Strychnia, its chemical constitution and uses.

Brucia. Its characters and crystals. Chemical composition and relation to strychnia. Tests of brucia. Nitric acid, perchloride of gold, chlorine, &c. Prepared from the diluted alcohol washings in the strychnia process.

Sulphate of Brucia.

Igasuric Acid.

Igasuria of Desnoix.

Pharmaceutical preparations of Nux Vomica. Owing to the horny texture of nux vomica, it should be steamed and then ground or bruised, to prepare it for the action of liquids.

Tinctura Nucis Vomica, U. S. P. The powder should be macerated or digested, and given abundant time for exhaustion.

Extractum Nucis Vomicæ, U. S. P. When made with strong alcohol, the

QUINIA. Its characters, solubility, relations with acids and re-agents. Quinolescence.

Its Tests. Important, and requiring careful practical study. Its composition; results of distillation with potassa. Quinolina.

Sulphate of Quinia. U. S, P. Its characters, solubility, etc. U. S. Process for manufacturing it. Other processes. Henry's, Herapath's, Powers and Weightman's, Pharmacy of sulphate of quinine; mixtures, pills, etc. Adulterations and tests of purity require careful study; its relation to iodine.

Muriate of Quinia. How prepared.

Acetate of Quinia. How prepared,

Ferrocyanate of Quinia. How prepared.

Arseniate of Quinia. How prepared.

Tannate of Quinia and other salts. How prepared.

Quinidia. Exists nore particularly in some barks from New Granada. Its characters and tests.

Quinicina. Its relations with quinia and quinidia. Tests.

Cinchonia. Its characters. Is more insoluble than quinia. Tests of purity, and for distinguishing salts of cinchonia. Preparation of commereial sulphate. Tests of purity. Relations in solubility with sulphate of quinia.

Cinchonidia. Its characters and tests.

Cinchonicin. Its characters.

Atomic constitution of the cinchona alkaloids.

Kinic Acid. Its characters. Crystallization. Tests and preparation.

Cinchotannic Acid, and its relations to the cinchona alkalies.

Pharmacy of Cinchona.

Powder. In powdering bark, all portions should be mixed after the operation, unless that result occurs in the process.

Infusum Cinchonæ Flavæ, U. S. P. Preparation.

Infusum Cinchonæ Rubræ, U. S. P. Preparation.

Infusum Cinchonæ Comp. U. S. P. With acid.

Decoctum Cinchonæ Flavæ, U. S. P. Preparation.

Decoctum Cinchonæ Rubræ, U. S. P. Preparation.

The relations of Peruvian bark to the solvent power of water should be well studied.

Ext. Cinchonæ Aquosa. From C. pallida.

Tinctura Cinchonæ, U. S. P. From calisaya bark.

Tinctura Cinchonæ Comp., U. S. P., or Huxham's tincture from red bark.

Vinum Cinchonæ, Ed. Pharm. From calisaya.

Extractum Cinchonæ Fluidum. Taylor's.

Extractum Cinchonæ Fluidum, made with an acidulated watery menstruum.

Syrupus Cinchonæ Vinosa of Codex F.

Extractum Cinchonæ Flavæ, U. S. P.

Extractum Cinchonæ Rubræ, U. S. P.

Quinoidina. Its nature and uses as precipitated extract of bark.

Quinium of Delondre, analogous to Ellis's Extractum calisayacum.

OPIUM, U. S. P. The inspissated juice of Papaver somniferum, obtained by incision from the capsule. The pharmaceutist should study the subject of opium thoroughly, as regards its commercial history, composition, adulterations, and variable normal condition. The entire ingredients that have been found in commercial opium are not all found in every sample, and those ingredients that are of universal occurrence, vary much in proportion. Opium contains *morphia, codeia, narcotina, theobaina, papaverina, opiania,* (sometimes,) *pseudomorphia.* Narcein, meconin, porphyroxin, meconic acid, acid resin, acid extractive, gum, caoutchouc, glucose, volatile odorous matter, albumen, and sulphuric acid.

Morphia, U. S. P. Discovered by Sertuerner. Its characters and composition. Its tests, NO^5, sesquisulphate of iron, iodic acid, tannin, chloride of gold, chlorine water, ammonia, &c.

Preparation of Morphia, U. S. P. process, or that of Dr. Staples. Its advantages. French processes. Gregory and Robertson's process. Preliminary essaying of opium by Conerbe's process. By other processes.

Morphiæ Sulphas, U S. P.

Liquor Morphiæ Sulphatis, gr.i. to ℥j. Syrupus Morphiæ, gr. i. to ℥j.

Majendie's Solution of Morphiæ, 16. grs. to ℥j.

Fixed oil. Its chemical constitution. Bower's view of an acrid principle. Products of distillation of the oil with potassa. Castor oil consists of ricinolein and palmitin. Preparation of castor oil for commerce. By expression; by boiling; by solution.

Oleaginous mixture with gum.
" " " albumen.
" " " carbonate of potassa. Emulsion of castor beans.

OLEUM TIGLII, U. S. P., *Croton oil.* Its composition. Brand's analysis. Schillip's analysis, (Am. Journ. Pharm., vol. 30.) Crotonole. Its properties. Crotonic acid. Preparation of the oil. By expression, by solution in ether, by alcohol, by bisulphuret of carbon. Tests. Preparations. Pills, liniments, chocalate, capsules, etc.

OLEUM LINI, U. S. P. Consists chiefly of *linolein*; has strong drying qualities. Preparation by pressure.

Linimentum calcis, U. S. P. Other pharmaceutical uses.

THEOBROMA CACAO, the plant yielding chocolate nuts, which affords the Oleum cacao of commerce.

OLEUM CACAO. Butter of cacao. Its composition and fatty acids. Preparation of the oil and its uses in pharmacy. Chocolate—What is it?

Theobromin. Its composition. Preparation of chocolate used in medicine.

LAURUS NOBILIS, Baytree. The oil of the berries and distilled spirit of the leaves are used in medicine. Berries contain volatile oil and fixed oil.

Oleum Lauri, is a green semifluid oil. Owes its color to chlorophylle. Pharmaceutical uses.

OLEUM PALMÆ. *Palm oil.* Oil of the fruit of Elais Guineensis. Not much used in medicine.

OLEUM MYRISTICÆ EXPRESSUM. The expressed oil of nutmegs, consisting of the fixed and volatile oils. Myristicin, Myristic acid. Is called oil of mace.

Medicinal Extracts.

Definition of the term *extract*, as applied to pharmacy. Liquids that may yield extracts by evaporation. The composition of extracts very variable. Probable reaction of ingredients during preparation. Their classification according to menstrua. Design of extracts. Their preparation involves the processes of solution and evaporation.

Extracts of Juices. Extraction, and purification of juices from chlorophylle.

Aqueous Extracts require most heat. Evaporation of extractive liquids. Ebullition alters the extractive. Advantages of steam heat, and the vacuum pan.

Alcoholic Extracts.

Hydro-Alcoholic Extracts.

Ethereal Extracts. Consistence, alterations and preservation of extracts.

Fluid Extracts. Oleo-resinous fluid Extracts. Alcoholic fluid Extracts. Saccharine and Glycerinal fluid Extracts. Their preparation, alterations and preservation.

Drugs containing and owing their activity chiefly to Organic Alkalies.

The organic alkaloids as a class of chemical substances, deserve a careful study from the pharmaceutical student, as they embody the most important remedies derived from the vegetable kingdom. They nearly all contain nitrogen, and are all precipitated by tannic acid; by far the larger number are crystallizable; a few are fluid at ordinary temperatures; they are in nearly every instance found combined with acids, and vary extremely in their relations to solvents. Besides the natural alkaloids, a large number are the result of artificial means, and among the artificial alkaloids there will doubtless be many that will prove useful as medicines.

CINCHONA, U. S. P. The bark derived from C. calisaya, C. cardaminea, C. lancifolia, and other species, and known as yellow, red, and pale cinchona barks.

The proportion of alkaloids varies in each species, both as a whole, and in relation to each other; but the following ingredients are well defined in some, and present in most of the species.

Kinate of Quinia, Kinate of Cinchonia, Kinate of Quinidia, Kinate of Lime. Kinate of Cinchonidia. Cincho-tannic acid, free, and combined with alkaloids. Cinchonic red, starch, gum, &c.

Simple Cerates and Ointments.

Ceratum Simplex, U. S. P.
Ceratum Cetacei, U. S. P.
Unguentum Simplex, U, S. P.
Unguentum Aquæ Rosæ, U. S. P.
Unguentum Glycerinæ, Ecky.

Simple cerates, &c., should be preserved from the air with great care to avoid rancidity.

Medicated ointments are of three classes.

1st. Those formed by mechanically mixing powders, extracts, etc., with simple ointment or lard. The powder for ointments of this kind should be finely triturated and free from grit. Extracts should be softened when not soft, and the ointment when finished should be perfectly homogeneous in texture.

2d. Ointments by infusion, or those in which the melted lard is used as a solvent for the medicinal principle. In those made by heating the green leaves or roots in lard, the heat should be continued till the moisture has evaporated avoiding excessive heat, as *Unguentum Tabaci*, U. S. P., *and Unguentum Carotæ*. *Unguentum Cucumis*, is made by beating the juice of cucumbers with a simple ointment until the odor is extracted by the fat.

3d. *Ointments involving chemical action*, as citrine ointment.

When strong nitric acid acts on hot fatty matter containing much olein, the latter is converted into a new solid fat called elaidin and a red oil, which gives a yellowish color to the result. This occurs in the process for ointment of nitrate of mercury through the excess of nitric acid used.

Elaidin has the same composition as olein, and a soft butyraceous consistence. When saponified by alkalies it yields elaidic acid and glycerin.

Unguentum Hydrargyri nitratis, U. S. P.

Process for citrine ointment, U. S. P. Necessity of using full quantity of nitric acid. Advantages of heating to 200° F. to get the correct consistence and color.

Various suggestions to improve by the substitution of other fats for neat's foot oil.

Oleum Olivæ, U. S. P. Derived from fruit of the Olea Europea, or olive tree, by expression. Mode of preparation. *Virgin oil, ordinary oil, common oil.* Composition of olive oil. Specific gravity. Tests of its purity. Elaeometer. Electrical tests. Poutet's nitrate of mercury test. Adulterating oils. Poppy, ground-nut, &c.

Soaps and Saponification.

Sapo, U. S. P. Soap of soda and olive oil. Four kinds of medicinal soap.

Sapo, U. S. P.
Sapo Vulgaris, U. S. P.
Sapo Mollis, London Pharm.
Sapo Amygdalinus, Codex.

History of soap. Its mode of preparation. Grain soap, white soap, soft soap. Tests for good quality of soap. Incompatibles. Qualities as an antidote for strong acids and mineral salts. Pharmaceutical preparations of soap.

Tinctura Saponis Camphorata, U. S. P.
Linimentum Sapo. Camphorata, U.S.P. Kind of soap proper. Should be dry.
Ceratum Saponis, U. S. P.
Emplast. Saponis, U. S. P.

Plasters. Definition and general characters.

Emplastrum Plumbi, U. S. P. Preparation, composition and properties. Use of lard oil as a substitute for olive oil. Its advantages and disadvantages. Shoemaker's apparatus. Preparation of glycerin from lead plaster.

Burnt Plasters. Made without water. Oily acids set free by heat, and then combine.

Amygdala, U. S. P., are the kernels of the Amygdalus communis. Var. *dulcis*. *Composition*—Fixed oil, gum, sugar and a peculiar albumen called emulsin.

Oleum Amygdalæ, U. S. P. Mode of preparation. Its composition and uses. *Emulsion* of oil, ℥j. to Oss.

Mistura Amygdalæ, U. S. P.
Syrupus Amygdalæ, U. S. P. See A. Amara.
Sapo Amygdalinus. French Cordex.

Ol. Ricini, U. S. P. Castor oil is the product of *Ricinus communis*. It contains fixed oil, gum, albumen, emulsin and an acrid principle.

Powder. Its uses and objections.
Mistura Assafœtidæ, U. S. P.
Tinctura Assafœtidæ, U. S. P.
Spiritus Ammoniæ Fœtidus, L. Pharm.
Pilulæ Assafœtidæ, U. S. P.
Pilulæ Aloes et Assafœtidæ, U. S. P.
Emplastrum Assafœtidæ, U. S. P.

The Fatty Bodies.

Fixed oils are generally neutral compounds of the oily acids with glycerin and the general name of *glycerides* has been given to all fats and oils having a glycerin base. Proximate fatty salts never occur singly, but in groups of two or more, thus, *stearin*, *margarin* and *olein* in suet; *margarin* and *olein* in lard, and olive oil, &c.; *margarin*, *palmitin*, *olein* in butter.

The glycerides are all saponifiable by boiling with potash or soda lye.

Glycerides containing over 20 eq. of carbon, when pure, are devoid of smell.

Glycerides containing less than 20 eq. carbon have smell and taste as *butyrin* in butter, *valerin* in train oil, &c.

Glycerides are generally insoluble in water, sparingly in alcohol and very soluble in ether, turpentine, benzole, and sulphuret of carbon.

Glycerides are decomposed by strong heat, and yield acrolein invariably, and sebacic acid when olein is present.

Sulphuric acid decomposes them by its tendency to combine with glycerin and form sulpho-glyceric acid.

Nitric acid decomposes them, yielding carbonic, formic, oxalic, succinic and suberic acids.

All fats, however, are not glycerides, as oxides of cetyle, ceryl; myricyl and propyl in some cases take the place of *oxide of glyceril* or glycerin.

Fats with a glycerin base can be made by synthesis.

Most of the fatty oils are composed of two or more of the following, viz: stearin, margarin, palmitin, and olein.

Stearin, its properties, composition and preparation.

Margarin, its properties, composition and preparation.

Palmitin, its properties, composition and preparation.

Olein, its properties, composition and preparation.

Solvent power of fixed oils on resins.

Effect of moisture and albumen on the fixed oil of seeds to set their acids at liberty.

Method of extracting fixed oils:
1. Expression with or without heat.
2. Boiling with water and skimming.
3. Solution in ether and alcohol.

Oily Acids.

Hydrated stearic acid. Its composition, preparation and properties.

Hydrated margaric acid. Its composition, preparation and properties.

Palmitic acid. Its composition, preparation and properties.

Oleic acid. Its composition, preparation and properties.

Glycerina, U. S. P. Composition and characters. Preparation by U. S. P. process. Preparation by distillation. Its chemical properties and solvent powers.

Preparations of the Fats and Oils.

Emulsions. Definition:
1. Oleo-albuminous seeds with water.
2. White or yolk of egg, oil and water.
3. Gum-mucilage, oil and water.
The conditions of success with these.
4. Alkaline emulsions.
Liniments, oily and saponaceous.
Cerates, *Ointments* and *Plasters*.

ADEPS, U. S. P. Lard consists of stearin, margarin and olein. Fuses at 100° F. It should be carefully freed from moisture in order to keep. Avoid excessive heat. Should be kept close from air.

SEVUM, U. S. P. Suet. Its preparation for medicinal use.

CERA FLAVA, U. S. P.

CERA ALBA, U. S. P. Yellow wax has specific gravity ·96. Fuses at 142° F. Process of bleaching. Chemical composition, constitation, adulteration, tests.

CETACEUM, U. S. P. *Spermaceti.* It fuses at 112° F. Specific gravity .943. Its chemical nature. Chief use in ointments, but sometimes as an emulsion. Emulsion of spermaceti with yolk of eggs.

fluid at first, but hardens by age. Contains both *Benzoic* and *Cinnamic* acids, and a little cinnamein and resin.

Cinnamic Acid. Its preparation and composition. It belongs to the cinnamyle series. Its relation to oil of cinnamon and benzoic acid.

Tinctura Tolutana, U. S. P.

Syrupus Tolutanus, U. S. P. Syrup of Tolu, by London Pharmacopœia. Finley's process for syrup of tolu.

Trochisci Tolutani.

Mistura Tolutana.

BENZOINUM, U. S. P. It contains three resins, benzoic acid, and traces of volatile oil.

Benzoic Acid. Its properties, characters, and preparation. Mohr's process, or that of U. S. P. Wet process, or that of Wohler. Preparation from urine of cattle.

Gregory's process by benzoic ether.

Tinctura Benzoini Composita, U. S. P.

Fumigating pastilles.

STYRAX, U. S. P. It contains volatile oil, resin, styracin, and cinnamic acid.

Styrax Purificata, U. S. P.

Poplar Buds. Their relation to balsams.

LIQUIDAMBER STYRACIFLUA.

Its oleo-resin contains cinnamic acid.

Syrup of the bark of Dr. Wright.

Prepared like syrup of wild cherry bark.

GUAIACI LIGNUM, U. S. P.

GUAIACI RESINA, U. S. P., is the resinous exudation of Guaiacum officinale and is obtained by incision. It contains a peculiar acid, and itself by distillation affords an oily substance analogous to the salicylous acid of salicin, and which is called hyduret of guaiacyle, hence it should be classed with the balsams. The resin of guaiac acts as an acid and assume a green color.

Powder. Its tendency to conglomerate.

Mistura Guaiaci. Lond. and Ed. Becomes blue by standing.

Tinctura Guaiaci, U. S. P.

Tincture Guaiaci Ammoniata, U. S. P.

Tinctura Guaiaci Alkalina. Dewees.

Sapo Guaiacinus.

Gum Resins.

The gum resins exude naturally or by incision as a milky juice and harden into tears. Their consistence varies from a soft pilular consistence to a dry and pulverizable solid. They usually contain a little volatile oil, which gives them odor, and influences powerfully their medicinal qualities.

GAMBOGIA, U. S. P. Concrete juice of an unknown tree of Siam. Consists of yellow resin 80, gum 20.

The resin of gamboge is peculiar; the gum resin easily miscible with water by trituration, and forms a resinous emulsion. Usually administered in pills. No officinal preparations.

SCAMMONIUM, U. S. P. Scammony is the inspissated juice of convolvulus scammonia. The purest scammony contains 80 to 90 per cent. of resin mixed with gum and coloring matter, very commonly adulterated.

Resin of Scammony. How prepared. Is easily decolorised. Officinal, in Ed. Pharm. Its chemical characters.

Mistura Scammonii, Ed.

MYRRHA, U. S. P. Myrrh exudes from Balsamodendron myrrha of Arabia. It contains volatile oil, two resins' gum, and bassorin. Activity due to bitter resin and volatile oil.

Powder generally has lost much volatile oil.

Mistura Myrrhæ. The ready miscibility of myrrh with water.

Tinctura Myrrhæ, U. S. P. Made by displacement.

Tinctura Myrrhæ et Capsici, or No. 6.

Pilulæ Aloes et Myrrhæ, U. S. P.

Emplastrum Myrrhæ.

AMMONIACUM, U. S. P.

Ammoniac contains volatile oil, resin, gum, bassorin.

Mistura Ammoniaci, U. S. P.

Emplastrum Ammoniaci, U. S. P.

Emplastrum Ammoniaci c. Hydrargyro, U. S. P.

GALBANUM, U. S. P.

Volatile oil, gum, resin.

Pilulæ Galbani Composita. U. S. P.

Emp. Galbani Compositum, U. S. P.

ASSAFŒTIDA, U. S. P. Contain a sulphuretted volatile oil, two resins, and gum.

Oil of Assafœtida consists of the sulphuret and bi-sulphuret of feruryl. ($C^{12}H^{11}+S$, and $C^{12}H^{11}+S^2$.)

Relation to alkalies, which prove some of them to be resinous acids, whilst others should be considered indifferent resins.

The results of their distillation with heat are volatile oils, which resemble the original oils.

Uses of resins in pharmacy.

Oleo-Resins.

TEREBINTHINA. U. S. P. White turpentine. Its proximate composition embraces four resins and a volatile oil. Pimaric, pinic, and sylvic acids.

OL. TEREBINTHINÆ, U.S.P. Comp. C^{20} H^{16}. Its proximate constitution, specific gravity, solubility and solvent power, combinations with hydrochloric acid, boiling point, action of oxygen on it, action of sulphuric and nitric acids. Its hydrate crystalline, administered internally in the form of emulsion.

1. *Emulsion* with gum and sugar.
2. " " olive oil, gum, and sugar.
3. " " yolk of egg.

Pil. Terebinthinæ, with magnesia.

Starkey's soap. Eau Hæmostatique, and Eau de Brocheri.

Linimentum Terebinthinæ, U. S. P., or, Kentish ointment.

Preparation of oil of Turpentine.

RESINA, U. S. P. Rosin.

Cerat. Resinæ, U. S. P., and *Cerat. Resinæ, Comp.* U. S. P.

Emplastrum Resinæ, U. S. P.

PIX. LIQUIDA, U. S. P. *Tar.* Tar consists of pyretines, pyrelains, pyrostearins. Preparation. Nature and composition.

Oleum Picis Liquidæ. Oil of Tar.

Ointment of oil of tar

Tincture of oil of tar.

PIX NIGRA *Lond.*

CREASOTUM, U. S. P. Composition C^{13} H^{8} O^{2}. Preparation from wood-tar. Its properties, specific gravity, boiling point, solubility, anti-septic power, adulterations and tests.

Mistura Creasoti. Ed. Pharm.

COAL TAR. Its constituents.

Tar pills. Fumigation with oil of tar.

Unguentum Creasoti, U. S. P.

Aqua Creasoti.

Unguentum Picis Liquidæ.

Vinum Picis Liquidæ, or Tar Bear. Its preparation.

Carbolic Acid, or mineral kreosote. Its chemical nature and relations.

Naphtha. Its preparation and composition.

Benzole. Its preparation and composition. Uses in Pharmacy as a solvent.

Toluole. Eupione.

Naphthaline. Paraffine.

Aqua Picis Liquidæ. Tar water.

Fuligo Ligni. Soot. Its composition.

Physic's alkaline infusion.

Decoction and ointment of soot.

SUCCINUM, U. S. P. Amber. Its vegetable origin and history.

Ol. Succini, U. S. P. Preparation and characters.

Ol. Succini Rect., U. S. P. Preparation and characters.

Succinic Acid. Its properties. Preparation from amber. Preparation from margaric acid. Preparation from malate of lime.

PIXABIETIS, U. S. P. Burgundy pitch.

PIX CANADENSIS, U. S. P. Hemlock pitch.

TEREBINTHINA CANADENSIS, U. S. P. Balsam of fir.

TEREBINTHINA VENETA. Ed. Pharm. Venice turpentine.

MASTICHE. *Lond. Pharm.* Its pharmaceutical uses.

COPAIBA, U. S. P.

Liquid oleo-resin from Copaifera officinalis. Its variable composition. Causes. Age of tree a reason. Contains a volatile oil and copaivic acid.

Oleum Copaibæ, U. S. P. Preparation of the volatile oil by distillation. Its ultimate composition. Isomeric with oil of turpentine. Action of air on it. Should be kept close.

Copaivic acid. Its relation to bases.

Pilulæ Copaibæ, U. S. P. Emulsion of Copaiba. Capsules of Copaiba.

Balsams.

BALSAMUM PERUVIANUM. U. S. P. Balsam of Peru. Its composition. Resin, cinnamic acid, cinnamein, and volatile oil. Nature of cinnamein. Its relation to cinnamic acid. Uses of Balsam of Peru.

BALSAMUM TOLUTANUM, U. S. P. Balsam of Tolu. Obtained by incision;

principle, fixed oil and a bitter principle.

Infusum Prumi Virginianæ, U. S. P.

Syrupus Prumi Virginianæ. U. S. P.

Distilled water may be used in lieu of cherry laurel water.

Wine of Wild Cherry.

Extractum Prumi Virginianæ Fluidum.

ACIDUM HYDROCYANICUM DILUTUM, U. S. P. Contains 2 per cent. of anhydrous acid. Process of U. S. P. with ferrocyanide of potassium and sulphuric acid. Heating; condensation; luting; reason for placing water in receiver; method of reducing the strength to 2 percent; method of securing stoppers of vials; chemistry of hydrocyanic acid.

Extemporaneous process of U. S. P. with cyanide of silver.

Strength of the acid of London Pharm. 2 per cent.

Strength of the acid of Dublin Pharm., 2½ per cent.

Strength of the acid of Edinburgh Pharm., 3·2 per cent.

Strength of the acid by Scheel's, process 5 per cent.

How to preserve hydrocyanic acid.

GAULTHERIA PROCUMBENS, U. S. P. Wintergreen.

OLEUM GAULTHERIÆ, U. S. P., is obtained by distillation of the leaves with water. Its remarkable chemical nature, being the methylic ether of salicylic acid. Can be made artificially. Action of potassa on it. Artificial rose water made from it.

BETULA LENTA. The bark contains *gaultherin*. Its relations to oil of gaultheria. Preparation. Properties of volatile oil the same as those of gaultheria oil. Uses.

SPIRÆA ULMARIA, or meadow sweet. Volatile oil. Its relation to salicyle. Is itself salicylous acid. Uses.

Volatile Oils of Cruciferous plants are sulphuretted oils.

SINAPIS NIGRA, U. S. P. Black Mustard seed. Contains sweet fixed oil, vegetable albumen, myrosin, *myronate of potassa*, sugar and sinapsin. By reaction between myronic acid and myrosin (a kind of emulsin) the volatile oil of black mustard is developed. It does not pre-exist.

Myronic acid and its potassa salt, contains carbon, hydrogen, nitrogen, oxygen and sulphur, is a syrupy, uncrystallizable liquid, soluble in water, alcohol and ether.

Oil of Black Mustard. Its preparation, properties, volatility, density and intense acrimony. It is the sulphocyanuret of allyle. Forms thiosinamin with ammonia. Thiosynnamin. Sinnamin. Sinapolin. Distilled with potassium it yields sulphuret of allyle, or oil of garlic. Uses in pharmacy of oil of mustard. Composition. $C^8\ H^8\ N^2\ S^2$. Specific gravity.

Distilled water of mustard. Powder. Sinapisms.

SINAPIS ALBA, U. S. P. Its composition. Yields no volatile oil by reaction with myrosin, but a sulphuretted nitrogenous principle of great acrimony. The taste of mustard and sulphocyanic acid is found at the same time in the liquid.

ALLIUM, U. S. P. Garlic. Volatile oil of garlic; its chemical relations.

Acetum Allii.

Syrupus Allii, U. S. P.

ARMORACIA, U. S. P. Horseradish. Volatile oil.

Infusum Armoraciæ Compositum, U. S. P.

Resins, Oleoresins, Gum-resins and Balsams.

Resins are solid substances, frequently associated with volatile oils, from which they are usually derived by a process of gradual oxidation.

When both are abundant a fluid oleo resin results.

When associated with gum, water, cautchouc, &c., a gum-resin is formed.

When a solid or fluid oleo-resin contains benzoic or cinnamic acids it is called a balsam.

Natural resins are not homogeneous, but usually consist of two or more resins.

Physical character of resins, as regards friability, electricity, etc.

Solubility in alcohol, ether, chloroform, volatile and fixed oils.

principle. Chemistry of the oil remarkable.

Confectio Rutæ. London.

Extractum Rutæ. Oleum Rutæ Fixum.

TANACETUM, U. S. P. Contains volatile oil and acrid bitter principle. The volatile oil is poisonous.

ERIGERON CANADENSE. U.S.P. Volatile oil and extractive. The oil is very light, and is used as an anti-hæmorrhagic.

SABINA, U. S. P. Tops of Juniperus sabina. Savin tops contain much volatile oil, which is poisonously acrid. Is a hydrocarbon, and associated with an acrid resin. The *powder* and *extract* are used.

Ceratum Sabinæ, U. S. P.

JUNIPERUS. Fruit of Junip. communis. Contains volatile oil, resin, extractive, WAX, and saccharine matter.

Oleum Juniperi, U.S.P. is a hydrocarbon, most abundant in unripe berries. Old berries are resinous and less oily. Commercial oil from leaves and fruit together.

Spiritus Juniperi Comp., U. S. P.

Infus. Juniperi Comp., (Am. Journ. Ph., vol. XXV. p. 205.)

SERPENTARIA, U. S. P.

Contains volatile oil, soft resin and bitter extract. Wiegand found Aristolochia reticulata strongest.

Infusum Serpentariæ, U. S. P.

Tinctura Serpentariæ, U. S. P.

Fluid extract.

BUCHU, U. S. P. Leaves of Barosma crenata. Contains volatile oil, resin, and extractive. The volatile oil mainly active.

Infusum Buchu, U. S. P.

Tincture, Fluid Extract, &c.

CIMICIFUGA, U. S. P. C. racemosa. Contains a volatile principle and resin. Latter called *Cimicifugin* or macroytin.

Tincture, Infusion, Fluid Extract.

CROCUS, U. S. P. Saffron. Stigmata of Crocus sativus. Contains volatile oil and coloring matter called polychroite.

Powder, Tincture, Syrup, Infusion.

VALERIANA, U. S. P. Root of Valeriana officinalis.

Composition.—Volatile oil, valerianic acid, bitter resin, extractive, starch, &c.

Oleum Valerianæ, U. S. P. Its complex nature. Contains bornein, borneol, valerol and valerianic acid.

Preparation of the volatile oil.

Preparation of the acid from valerian.

Valerianic acid. Properties and tests. Its hydrates. Preparation from fusel oil by the process of the Dublin Pharmacopœia. Valerianate of soda. Valerianate of zinc. Valerianate of iron. Valerianate of quinia. Valerianate of bismuth. Valerianate of morphia.

Powder of Valerian. Distilled water.

Infusum Valerianæ, U. S. P. Syrup.

Tinctura Valerianæ, U. S. P.

Tinctura Valerianæ Ammoniata, U.S.P

Extractum Valerianæ Fluidum, U.S.P.

Extractum Valerianæ.

Volatile Oils not Pre-existing in Plants, but the result of Reaction with Water.

AMYGDALA AMARA, U. S. P.

Composition.—Fixed oil, emulsin, amygdalin, uncrystallizable sugar, gum, &c.

Amygdalin. Its characters. Its remarkable composition and reaction with emulsin and other bodies. Its preparation.

Emulsin. Composition, preparation, coagulability by heat, &c.

Oleum Amygdalæ Amaræ, U. S. P. Preparation. Reaction requires time. Specific gravity of the oil. True oil not poisonous when freed from HCy. Its purification from prussic acid. It is the hydruret of benzyle. Chemical qualities and characters of the oil of bitter almonds. Artificial oil of bitter almonds or nitro benzole used as an adulteration; alcohol also used.

Aqua Amygdalæ Amaræ, U. S. P.

Aqua Amygdalæ Amaræ, of European Pharmacy.

Liquor Amygdalinæ, of Liebig and Wohler. Its prussic strength.

Aqua Lauro-Cerasi. Composition and preparation.

Syrupus Amygdalæ, U. S. P. Orgeat syrup. Its preparation and characters.

PRUNUS VIRGINIANA, U. S. P. Wild cherry bark. Bark of Cerasus serotina.

Composition. — Amygdalin, tannin, gallic acid, resin, starch, an emulsoid

Tinctura Zingiberis, U. S. P.

Syrup Zingiberis, U. S. P. By the officinal process. By Finley's process.

Piperoid of Ginger. (Beral.) Troches of ginger. Infusion of ginger.

Drugs Characterized by pungent soft Resin and Volatile Oil associated.

PIPER, U. S. P. The unripe fruit of *P. nigrum*. Composition.—Piperin, volatile oil, soft resin, extractive, malic and tartaric acids.

Piperin. Its characters, crystallization, solubility, color, taste. Discovered by Oersted in 1819. Chemical nature. Results of its decomposition by heat and alkalies. Picolin. Its ultimate composition and preparation.

Volatile oil. A carbohydrogen. Its chemical characters.

Ext. Piperis fluid, U. S. P. Oil of Black pepper of commerce. Contains but little of the volatile oil. Its preparation and characters. Powder.

Confectio Piperis nigri. Ward's paste.

PIPER LONGUM. Its nature and characters.

CUBEBA, U. S. P. The dried unripe fruit of P. cubeba. *Composition*.—Cubebin, soft resin and volatile oil.

Cubebin. Characters; crystallization; contains no nitrogen; Its preparation.

Oleum Cubeba, U. S. P. Preparation properties, color and composition.

Extractum Cubebæ Fluidum, U. S. P. (Oleoresinæ cubebæ) is an ethereal extract. Cubebin separates by standing.

Powder. Quality, tests.

Tincturæ Cubebæ, U. S. P. Spitta's lozenges.

CAPSICUM, U.S.P., (dried fruit of Capsicum annuum, and baccatum.

Composition. Fixed oil, pungent, soft resin, coloring matter, &c.

Capsicin. Its nature.

Oleo-resinæ Capsici, or ethereal fluid extract.

Tinctura Capsici, U. S. P.

Infusum Capsici, U. S. P.

Trochisci Capsici.

PYRETHRUM. U. S. P. Root of Anthemis pyrethrum.

Composition. Volatile oil. Fixed oil. Soft acrid resin or *pyrethrin*. *Inulin*.

Tinctura Pyrethri. Not officinal.

Extract by alcohol, used for toothache.

Xanthoxylum, U. S. P. Prickly ash; bark of X. fraxineum.

Xanthoxylin of Dr. Staples. Oleoresin by ether.

Decoction. *Tincture*. Not officinal.

Drugs Characterized by Containing Volatile Oil, Bitter Principle, and Extractive.

HUMULUS, U. S. P.

LUPULINA, U. S. P. Chemical composition of Lupulin. Volatile Oil, resin, bitter principle, and valerianic acid.

Nature of the volatile oil and resin.

Valerianic acid a constituent.

Lupulite, the bitter principle said to be alkaline.

Tinctura Humuli, U. S. P.

Tinctura Lupulinæ, U. S. P.

INULA, U. S. P. Root of Inula Hellenium.

Composition. Volatile oil, hellenin, inulin, soft, acrid resin, bitter extractive.

No officinal preparations.

CALAMUS, U. S. P. Rhizome of Calamus aromaticus. Volatile oil, acrid-resin, &c.

ABSINTHIUM U. S. P. Wormwood; containing volatile oil, bitter resinoid matter called absinthiin. Syrup tincture and infusion used.

Aromatic Wine contains it. A fixed oil by infusion is made in Europe.

ACHILLEA MILLIFOLIUM. Yarrow contains a blue volatile oil and extractive.

ANTHEMIS. U. S. P. Chamomile. Contains volatile oil and bitter extractive.

Infusion, U. S. P. Syrup and extract.

Fluid Extract.

SANTONICI SEMEN. Flowers of Artemisia santonica. They contain santonin and volatile oil. Properties. How prepared. Chemical nature. Used in troches.

CHENOPODIUM, U. S. P. Seed of C. anthelminticum, volatile oil, resin, and bitter extractive.

Oleum Chenopodii, U. S. P.

RUTA, U. S. P. *Rue*. Contains volatile oil, inulin, extractive and acrid

ANISUM, U. S. P. The fruit of Pimpinella anisum.

Oleum Anisi, U. S. P. Its preparation and characters.

Aqua Anisi. The volatile oil of Illicium anisatum, or Star-anise of the East Indies, is generally used instead of the true anise oil.

CORIANDRUM, U. S. P. Fruit of Coriandrum sativum.

Oleum Coriandri.

Aqua Coriandri.

Cyminum. London Pharm. Fruit of Cuminum cyminum.

Oleum Cymini. The oil of cumin seed has a peculiar chemical character.

The Aromatics Proper.

CAMPHORA, U. S. P. A stearoptene derived from Camphora officinarum; two kinds of camphor, the officinal, and that from Dryobalanops camphora.

Oil of Camphor, from Camphora officinarum, is an oxide of camphene, obtained by distillation from the leaves. Its composition and uses. Properties of camphor. Action of NO_5. Camphoric acid. Solubility in water.

Oil of camphor from Dryobolanops camphora is a hydrate of camphene.

Effect of camphor on resins and gum resins. Powder. Tincture. Emulsion of camphor with gum and sugar. Emulsion with oil, gum and sugar. Emulsion with myrrh. Solution in chloroform.

Aqua Camphoræ, U. S. P. Its mode of preparation.

Linimentum Camphoræ, U. S. P.

Dentifrice. Aromatic vinegar. Pills, plaster, and ointment.

CINNAMOMUM, U. S. P.

Cinnamomum Zeylanicum, (Ceylon.)

Cinnamomum Aromaticum, (Chinese.) Composition of the bark.

Oleum Cinnamomi, (Ceylon.) Its chemical nature. Is a hydruret of cinnamyle. Yields cinnamic acid by oxidation.

Oleum Cinnamomi, U. S. P.,(Chinese.) Properties, adulterations and tests.

Spiritus Cinnamomi, Dublin Pharm.

Pulv. Cinnamomi.

Aqua Cinnamomi, U. S. P. Its preparation.

Tinctura Cinnamomi, U. S. P.

Tinctura Cinnamomi composita, U.S.P. Uses of cinnamon as a *carminative* and *adjuvant*.

SASSAFRAS, U. S. P. Bark of the root of Laurus sassafras.

Oleum Sassafras, U. S. P. Its properties and preparation. *Specific gravity.* Chemical characters.

Pulv. Sassafras. For dentifrices.

CANELLA, U. S. P. The inner bark of Canella alba. It contains volatile oil, resin and bitter extractive. The compound nature of its volatile oil, which consists of a neutral and an acid oil. Its chemical characters. Used in powder of aloes and canella.

CARYOPHYLLUS, U. S. P. Unexpanded flower buds of Caryophyllus aromaticus. They contain volatile oil, resin and tannin.

Oleum Caryophylli, U. S. P. Its nature. Acid oil. Neutral oil. Eugenate of potassa, etc. Preparation of the volatile oil by steam, heat.

Infusum Caryophylli, U. S. P.

Tinctura Caryophylli.

PIMENTA, U. S. P. Volatile oil, &c.

Oleum Pimentæ, U. S. P. Its chemical nature.

Aqua Pimentæ, with volatile oil and by distillation.

Spiritus Pimentæ, U. S. P.

CARDAMOMUM. Fruit of Elettaria cardamomum. It contains of fixed oil and volatile oil about ten per cent. Oleum cardamomi. Its nature, &c. Ethereal extract of cardamom. Powder. Difficulty of its preparation. Why?

Pulvis Aromaticus, U. S. P.

Confectio Aromatica, U. S. P.

Tinctura Cardamomi Comp., U. S. P.

MACIS, U. S. P. Arillus of the nutmeg.

MYRISTICA, U. S. P. *Nutmegs* are the kernel of M. moschata.

Volatile oil. Its characters and uses.

Expressed oil. (See fixed oils.)

Powder, liability to to change.

Spiritus Myristicæ, U. S. P.

ASARUM CANADENSE, U. S. P. The root. Contains volatile oil and acrid bitter resin.

ZINGIBER, U.S.P. The rhizome of Zingiber officinale. Ginger owes its virtues to a pungent resin and volatile oil. Now these are the characteristics of the next *class*, and ginger may be looked upon as the connecting link between them.

AURANTII CORTEX, U. S. P. *Composition.*—Two kinds, bitter and sweet; both officinal.

Oil of Orange peel. Its preparation by grating, expression and clarification. Tendency to spoil by exposure. Why? Different from distilled oil of orange. Why? Yield, chemical characters, &c. &c.

Confectio Aurantii, U. S. P. Preparation and uses.

Syrupus Aurantii Corticis, U.S.P. Preparation. Its preparation by Finley's process with tincture and magnesia.

Syrupus Succi Aurantii. Preparation.

Tinctura Aurantii Corticis. Preparation from sweet and bitter orange peel.

FLORES AURANTII.

Orange flower water. Varieties, single, double, quadruple, &c.

Volatile Oil. Oil of neroli, different from that in the distilled water. Preparation, &c.

Syrup of Orange flowers. Orange buds. Issue peas. Oil of orange leaves. Essence de petite grain.

LIMONIS. *Limonis Cortex.* Its uses in medicine.

OLEUM LIMONIS, U. S. P. Its preparation, properties, chemical composition, adulterations and tests.

Tinctura Olei Limonis. (Essence of lemons.) Made with deodorized alcohol.

OL. BERGAMII, U. S. P. Characters, uses, tests, preparations, &c.

OIL OF CITRON.

OIL OF LIMES, &c.

LABIATÆ, or *Mint tribe.*

An extensive tribe of plants characterized by affording volatile oils, and sometimes in distinct cells. *All oxigenous.*

MENTHA PIPERITA, U. S. P. Culture on a large scale for its volatile oil. Uses.

Oleum Menthæ Piperitæ, U. S. P. Its characteristic properties; its preparation, uses, tests and adulterations.

Tinct. Olei Menthæ piperitæ, U. S. P.

Aqua Menthæ piperitæ, U. S. P.

Troschici Menthæ piperitæ, U. S. P.

MENTHA VIRIDIS, U. S. P. Its culture. Preparation of the volatile oil.

Oleum Menthæ Viride, U. S. P.

Tinctura Menthæ Viride.

Aqua Menthæ Viride.

ORIGANUM VULGARE, U. S. P. Its volatile oil not found in commerce.

Origanum Majorina, Sweet marjorum, contains volatile oil.

Thymus Vulgaris, Volatile oil, sold for oil of origanum in commerce.

MONARDA, U. S. P. *Monarda punctata.*

Volatile oil, U. S. P. Preparation, yield, properties. Its stearoptene called Monarda camphor. Properties.

Monarda Didyma. Coloring matter of its flowers. Volatile oil like bergamot in odor.

ROSMARINUM, U.S.P., from Rosmarinus officinalis.

OLEUM ROSMARINI. Its characters, tests and adulterations. Prepared from the tops by distillation.

Spiritus Rosmarini, U. S. P.

Essentia Rosmarini, Dublin Pharm.

LAVANDULA, U. S. P. Flowers and whole plant. Culture at Mitcham in England.

Oleum Lavandulæ, U. S. P.

Volatile oil of flowers, of leaves. Oil of spike. Preparation at Mitcham on a large scale. Its adulterations and tests.

Spiritus Lavandulæ, U. S. P. Preparation.

Spiritus Lavandulæ Compositus, U.S.P. Preparation.

HEDEOMA, U. S. P. Hedeoma pulegioides.

Ol. Hedeomæ, U.S.P. Its characters, etc.

SALVIA, U. S. P. Salvia officinalis.

Infus. Salviæ. Preparation and uses.

Syrup. Salviæ. Preparation and uses.

MARRUBIUM, U. S. P. Bitter principle and volatile oil.

Infusion. Syrup.

MELISSA OFFICINALIS, U. S. P. Infusion.

PATCHOULY. Volatile oil of Pogostemon patchouly, &c.

AROMATIC UMBELLIFERA. The fruit or seed vessels of many of the umbellifera contain a volatile oil, as cummin, anise, &c., and many that are not classed with the aromatics, contain oils, as conium, cicuta, &c.

FŒNICULUM, U. S. P. The fruit of Fœniculum vulgare. It contains volatile oil and fixed oil.

Oleum Fœniculi, U. S. P.

Aqua Fœniculi, U. S. P.

ACETUM DISTILLATUM.
Distilled Vinegar, U. S. P.
Characters and tests.

SUCCULENT BERRIES.
Composition.—Acids, Sugar, Pectin, &c.
Pectin. Its properties and uses.
Pectic Acid. How made; nature. Its use for jellies. Extraction of juices by pressure. Their fermentation.

RASPBERRIES. Fruit of Rubus Idæus. Composition.
Juice. How prepared to keep by the method of Appert.
Syrup. Its preparation.
Vinegar. Its preparation.

STRAWBERRIES. Fruit of Fragaria vesca. Composition.
Juice. Its preparation. Distilled water.
Syrup. Preparation of this.
Strawberry Essence.

BLACKBERRIES. Fruit of Rubus villosus. Composition.
Syrup. Wine.
Compound Syrup. With astringents.

MULBERRIES. Fruit of Morus nigra. Composition.
Syrupus Mori, Lond. Pharm., from juice.

CURRANTS. Fruit of Ribes rubrum. Composition. Wine.
Syrup. Clarification from Pectin with cherries.
Currant jelly.

GOOSEBERRIES. Fruit of Ribes grossularia. Composition of; preparation of syrup.

PINEAPPLES. Fruit of Bromelia ananas. Composition.
Preparation and clarification of juice.
Syrup of juice. How prepared.

Volatile Oils.

1. A numerous class of principles, very widely distributed in the vegetable kingdom, and which are the general cause of the odor of flowers and other parts of plants.

2. All parts of plants yield them in different instances.

3. Some plants contain several oils in different parts.

4. They occur sometimes in distinct cells.

5. Sometimes in the general juices.

6. Sometimes with resin and with fixed oils.

7. And they exist generally ready formed.

8. Sometimes generated by reaction of ingredients occurring naturally in separate cells.

9. Proximately consist of eleoptenes and stearoptenes.

10. Eleoptenes generally carbohydrogens.

11. Stearoptenes generally crystallizable, and contains oxygen.

12. In ultimate composition they consist of carbon and hydrogen, or carbon, hydrogen and oxygen, and sometimes of carbon, hydrogen and oxygen with nitrogen or sulphur.

13. Some oils consist of an eleoptene and an acid heavy oil, as oil of cloves.

14. Some oils are ethers of organic acids, as the oil of gaultheria.

Properties of Volatile Oils.

Color. Variable, often the result of oxidation.

Odor. Their most characteristic quality. They can be deprived of it by rectification from lime, but it returns by reoxidation.

Taste. Very variable in different oils, but a good character of each in particular.

Density. Varies from ·847 to 1·173; increases by age from oxidation.

Solubility in menstrua. Oxigenous oils are most soluble in water and alcohol. Oils containing only carbon and hydrogen are least soluble.

Solvent power of Oils. On resins and other oils.

Action of light and air. They cause oils to thicken and oxidize. (Avoid exposure.)

Action of Alkalies. Generally unaffected; a few decomposed.

Action of Acids. Nitric and sulphuric acids generally decompose and resinify them.

Action of the Haloid bodies. Iodine, bromine, &c.

Adulteration of the Volatile Oils. 1. By alcohol. 2. Fixed oils. 3. Other volatile oils, tests, &c.

AURANTIACEÆ. *Volatile oils from plants of the Orange tribe.*

Citrus Aurantium. The orange affords several volatile oils and other products to medicine.

specific gravity; its composition and strength.

Acetum Vini. Codex.

Wine vinegar. How made.

Composition and uses.

POTASSÆ BITARTRAS, U. S. P. Cream of tartar.

Tartar, argols. Exists as such in the grape. Why deposited from wine. How purified to make cream of tartar.

Characters of pure bitartrate of potassa. Its adulterations and tests.

ACIDUM TARTARICUM, U. S. P.

Its preparation on a large scale.

Saturation of the free acid.

Decomposition of neutral tartrate of potassa. Decomposition of citrate of lime. Evaporation and crystallization of the acid solution.

Characters of pure tartaric acid.

Its adulterations and tests. Its chemical composition.

Potassa Tartras, U. S. P. *Tartrate of potassa, Soluble tartar.*

Preparation; characters and composition.

Sodæ et potassæ tartras, U. S. P. *Tartrate of soda and potassa. Rochelle salt.*

Preparation, characters and composition.

Seidlitz powders. Composition.

Soda Powders. Composition.

Ferri Potassæ Tartras, U. S. P. *Tartrate of Iron and Potassa.*

Synonyms. Boule de Mars, Tartarized iron, &c.

Process, U. S. P. How conducted. Characters of the officinal salt. Percentage of iron in it. The crude salt of commerce.

Vinum Ferri.

Its preparation from iron filings.

Preparation from tartrate of iron and potassa.

Ferri Tartras.

Its characters and preparation.

Ferri et Ammoniæ Tartras.

Preparation by Procter's process. Its Characters. Compostion.

Antimonii et Potassæ Tartras, U. S. P. *Tartrate of Antimony and Potassa.*

Synonyms. *Tartar emetic, tartarized antimony.*

Process of U. S. P. Preparation of the oxide. Method of combining it with the cream of tartar.

Characters of the salt. Its adulterations. Tests of purity.

Vinum Antimonii, U. S. P. Its strength and preparation.

Unguentum Antimonii, U. S. P. Its strength and preparation.

LIMONIS. *Lemons.* (For the peel and volatile oil see class of volatile oils.)

Composition. Volatile oil, citric acid, mucilage, &c.

Lemon juice. Its composition.

Syrupus Limonis, U.S.P. Preparation.

Liquor Potassæ citratis, U. S. P. *Neutral Mixture.*

Its preparation from lemon juice; from citric acid; from citrate of potassa.

ACIDUM CITRICUM, U. S. P.

Preparation for commerce. Formation of citrate of lime. Decomposition of citrate of lime. Evaporation of acid solution. Its crystallization.

Characters of citric acid. Adulteration and tests. Composition. Uses in Pharmacy.

Potassæ Citras, U. S. P.

Citrate of Potassa.

Process of U. S. P., with bicarbonate of potassa. Its advantages over the process with common carbonate containing silica. Its uses and characters. Tests of purity.

Ferri citras, U. S. P.

Citrate of Iron.

Process of U. S. P. Characters; uses.

Citrate of Iron and Ammonia, Lond. Pharm.

Its preparation and characters.

Citrate of Iron and Magnesia.

Preparation and characters.

Citrate of Iron and Quinia.

Composition and preparation.

Citrate of Magnesia.

Soluble and solid salt. Its preparation and characters.

Liquor Magnesiæ Citratis, U. S. P.

Officinal process for its preparation; its characters; its alterations.

APPLES. *Malic Acid, Cider.*

The expressed juice of apples fermented is cider, and is used as a solvent due to its malic acid and alcohol.

Malic Acid, best prepared from Sumac berries; how prepared from Rhubarb stalks.

Bimalate of Lime. Its preparation. Isolation of malic acid; its characters, uses, composition.

Cider Vinegar.

Preparation and tests.

ALCOHOL, U. S. P. Specific gravity ·835 or 36° B. Characters, tests and composition.

Diluted Alcohol, U. S. P. Proof spirit, L. P. Contraction of volume. Uses. Deodorized alcohol, by charcoal. Atwood's alcohol.

Absolute alcohol, Ed. Ph. Process. Soubeiran's process.

Uses of alcohol in pharmacy.

1. As a solvent and antiseptic for permanent preparations.

2. As a solvent for extracting organic principles.

3. As a means of purification.

4. For the products of its decomposition by acids, etc.

Alcohol vinegar. Acetic fermentation. Reactions. Quick vinegar process. Its explanation.

ETHERS. Theories of etherification. Etherin theory. Ethyle theory of Liebig.

ETHER, U. S. P. Oxide of ethyle. Alcohol is then hydrated oxide of ethyle. U. S. P. process for making ether. Ether making temperature, 285°. Crude ether contains alcohol.

Washed Ether, called letheon, for inhalation. Advantage of steam pressure heat, as regards safety and control of process, to prevent formation of oil of wine. Characters of ether. Its specific gravity, boiling point, solvent powers, &c.

Oleum Ethereum, U. S. P. Heavy oil wine. Process of U. S. Pharm. Details of process. Rationale.

Characters of oil of wine. Specific gravity. Composition. Odor, taste, purity. Tendency to decompose.

Spiritus Etheris Compositus, U. S. P. Hoffman's anodyne,—U. S. P. formula. Its true characters. Dublin process, Edinburgh formula. Commercial Hoff. Anodyne. How made.

Sp. Ætheris Nitrici, U. S. P. U. S. P. process. Its rationale. Character of sweet spirits of nitre. Specific gravity. Tests. Impurities. Aldehyde. Nitric and Acetic Acids. Mode of preparation.

Acetic Ether. Mode of preparation. Characters.

Muriatic Ether. Mode of preparation and characters.

CHLOROFORMUM, U. S. P. Terchloride of formyl. U. S. process. Details.

Dr. Squibb's method for analysing products.

Characters of chloroform; boiling point; specific gravity; solvent powers; purity and tests. Composition; Uses.

Chloric Ether, or tincture of chloroform.

OXALIC ACID. Not officinal.

Its preparation from sugar and nitric acid.

Its preparation from starch.

Characters, tests, antidotes, uses.

MANNA, U. S. P. Belongs to the class of saccharine bodies. Its natural sources; mode of collection; commercial varieties.

Mannite. Its chief constituent.

Preparation of mannite. Its characters and composition.

Syrup of Manna.

Its constituents and specific gravity.

Acid Saccharine Fruits.

Various acidulous saccharine fruits are employed, indirectly or directly, in medicine. In these fruits uncrystallizable sugar exists, with one or more of the vegetable acids,—coloring matters, odorous matter, often containing pectin, mucilage, vegetable albumen and salts. The acids present are usually either citric, malic or tartaric. By virtue of the albumen the sugar readily undergoes the vinous fermentation, and their juices thus furnish fermented alcoholic liquids, of which *wine* is an instance.

THE GRAPE. Fruit of Vitis vinifera. Its Composition. The natural source of bitartrate of potassa. Dried grapes or raisins. Uses in pharmacy. When fermented, grape juice yields wine.

VINUM ALBUM, U. S. P. *Sherry*.

VINUM RUBRUM, U. S. P. *Port*.

White wines, how made—Madeira, Sherry, Teneriffe.

Red wines, why colored—Port, Claret.

Composition of wines. Spirituousness. How ascertained.

The terms dry, sweet and light, as applied to wine.

Bouquet of wines. Œnanthic ether.

Spiritus Vini Gallici, U. S. P.

Process of making brandy. Its

fluid at first, but hardens by age. Contains both *Benzoic* and *Cinnamic* acids, and a little cinnamein and resin.

Cinnamic Acid. Its preparation and composition. It belongs to the cinnamyle series. Its relation to oil of cinnamon and benzoic acid.

Tinctura Tolutana, U. S. P.

Syrupus Tolutanus, U. S. P. Syrup of Tolu, by London Pharmacopœia. Finley's process for syrup of tolu.

Trochisci Tolutani.

Mistura Tolutana.

BENZOINUM, U. S. P. It contains three resins, benzoic acid, and traces of volatile oil.

Benzoic Acid. Its properties, characters, and preparation. Mohr's process, or that of U. S. P. Wet process, or that of Wohler. Preparation from urine of cattle.

Gregory's process by benzoic ether.

Tinctura Benzoini Composita, U. S. P.

Fumigating pastilles.

STYRAX, U. S. P. It contains volatile oil, resin, styracin, and cinnamic acid.

Styrax Purificata, U. S. P.

Poplar Buds. Their relation to balsams.

LIQUIDAMBER STYRACIFLUA.

Its oleo-resin contains cinnamic acid.

Syrup of the bark of Dr. Wright.

Prepared like syrup of wild cherry bark.

GUAIACI LIGNUM, U. S. P.

GUAIACI RESINA, U. S. P., is the resinous exudation of Guaiacum officinale and is obtained by incision. It contains a peculiar acid, and itself by distillation affords an oily substance analogous to the salicylous acid of salicin, and which is called hyduret of guaiacyle, hence it should be classed with the balsams. The resin of guaiac acts as an acid and assume a green color.

Powder. Its tendency to conglomerate.

Mistura Guaiaci. Lond. and Ed. Becomes blue by standing.

Tinctura Guaiaci, U. S. P.

Tincture Guaiaci Ammoniata, U. S. P.

Tinctura Guaiaci Alkalina. Dewees.

Sapo Guaiacinus.

Gum Resins.

The gum resins exude naturally or by incision as a milky juice and harden into tears. Their consistence varies from a soft pilular consistence to a dry and pulverizable solid. They usually contain a little volatile oil, which gives them odor, and influences powerfully their medicinal qualities.

GAMBOGIA, U. S. P. Concrete juice of an unknown tree of Siam. Consists of yellow resin 80, gum 20.

The resin of gamboge is peculiar; the gum resin easily miscible with water by trituration, and forms a resinous emulsion. Usually administered in pills. No officinal preparations.

SCAMMONIUM, U. S. P. Scammony is the inspissated juice of convolvulus scammonia. The purest scammony contains 80 to 90 per cent. of resin mixed with gum and coloring matter, very commonly adulterated.

Resin of Scammony. How prepared. Is easily decolorised. Officinal, in Ed. Pharm. Its chemical characters.

Mistura Scammonii, Ed.

MYRRHA, U. S. P. Myrrh exudes from Balsamodendron myrrha of Arabia. It contains volatile oil, two resins' gum, and bassorin. Activity due to bitter resin and volatile oil.

Powder generally has lost much volatile oil.

Mistura Myrrhæ. The ready miscibility of myrrh with water.

Tinctura Myrrhæ, U. S. P. Made by displacement.

Tinctura Myrrhæ et Capsici, or No. 6.

Pilulæ Aloes et Myrrhæ, U. S. P.

Emplastrum Myrrhæ.

AMMONIACUM, U. S. P.

Ammoniac contains volatile oil, resin, gum, bassorin.

Mistura Ammoniaci, U. S. P.

Emplastrum Ammoniaci, U. S. P.

Emplastrum Ammoniaci c. Hydrargyro, U. S. P.

GALBANUM, U. S. P.

Volatile oil, gum, resin.

Pilulæ Galbani Compositæ. U. S. P.

Emp. Galbani Compositum, U. S. P.

ASSAFŒTIDA, U. S. P. Contain a sulphuretted volatile oil, two resins, and gum.

Oil of Assafœtida consists of the sulphuret and bi-sulphuret of feruly. ($C^{12}H^{11}+S$, and $C^{12}H^{11}+S^2$.)

Relation to alkalies, which prove some of them to be resinous acids, whilst others should be considered indifferent resins.

The results of their distillation with heat are volatile oils, which resemble the original oils.

Uses of resins in pharmacy.

Oleo-Resins.

Terebinthina. U. S. P. White turpentine. Its proximate composition embraces four resins and a volatile oil. Pimaric, pinic, and sylvic acids.

Ol. Terebinthinæ, U.S.P. Comp. C^{20} H^{16}. Its proximate constitution, specific gravity, solubility and solvent power, combinations with hydrochloric acid, boiling point, action of oxygen on it, action of sulphuric and nitric acids. Its hydrate crystalline, administered internally in the form of emulsion.

1. *Emulsion* with gum and sugar.
2. " " olive oil, gum, and sugar.
3. " " yolk of egg.

Pil. Terebinthinæ, with magnesia.

Starkey's soap. Eau Hæmostatique, and Eau de Brocheri.

Linimentum Terebinthinæ, U. S. P., or, Kentish ointment.

Preparation of oil of Turpentine.

Resina, U. S. P. Rosin.

Cerat. Resinæ, U. S. P., and *Cerat. Resinæ, Comp.* U. S. P.

Emplastrum Resinæ, U. S. P.

Pix. Liquida, U. S. P. *Tar.* Tar consists of pyretines, pyrelains, pyrostearins. Preparation. Nature and composition.

Oleum Picis Liquidæ. Oil of Tar.

Ointment of oil of tar

Tincture of oil of tar.

Pix Nigra *Lond.*

Creasotum, U. S. P. Composition C_{13} H^8 O^2. Preparation from wood-tar. Its properties, specific gravity, boiling point, solubility, anti-septic power, adulterations and tests.

Mistura Creasoti. Ed. Pharm.

Coal tar. Its constituents.

Tar pills. Fumigation with oil of tar.

Unguentum Creasoti, U. S. P.

Aqua Creasoti.

Unguentum Picis Liquidæ.

Vinum Picis Liquidæ, or Tar Bear. Its preparation.

Carbolic Acid, or mineral kreosote. Its chemical nature and relations.

Naphtha. Its preparation and composition.

Benzole. Its preparation and composition. Uses in Pharmacy as a solvent.

Toluole. Eupione.

Naphthaline. Paraffine.

Aqua Picis Liquidæ. Tar water.

Fuligo Ligni. Soot. Its composition.

Physic's alkaline infusion.

Decoction and ointment of soot.

Succinum, U. S. P. Amber. Its vegetable origin and history.

Ol. Succini, U. S. P. Preparation and characters.

Ol. Succini Rect., U. S. P. Preparation and characters.

Succinic Acid. Its properties. Preparation from amber. Preparation from margaric acid. Preparation from malate of lime.

Pixabietis, U. S. P. Burgundy pitch.

Pix Canadensis, U. S. P. Hemlock pitch.

Terebinthina Canadensis, U. S. P. Balsam of fir.

Terebinthina Veneta. Ed. Pharm. Venice turpentine.

Mastiche. *Lond. Pharm.* Its pharmaceutical uses.

Copaiba, U. S. P.

Liquid oleo-resin from Copaifera officinalis. Its variable composition. Causes. Age of tree a reason. Contains a volatile oil and copaivic acid.

Oleum Copaibæ, U. S. P. Preparation of the volatile oil by distillation. Its ultimate composition. Isomeric with oil of turpentine. Action of air on it. Should be kept close.

Copaivic acid. Its relation to bases.

Pilulæ Copaibæ, U. S. P. Emulsion of Copaiba. Capsules of Copaiba.

Balsams.

Balsamum Peruvianum. U. S. P. Balsam of Peru. Its composition. Resin, cinnamic acid, cinnamein, and volatile oil. Nature of cinnamein. Its relation to cinnamic acid. Uses of Balsam of Peru.

Balsamum Tolutanum, U. S. P. Balsam of Tolu. Obtained by incision;

principle, fixed oil and a bitter principle.

Infusum Pruni Virginianæ, U. S. P.

Syrupus Pruni Virginianæ. U. S. P.

Distilled water may be used in lieu of cherry laurel water.

Wine of Wild Cherry.

Extractum Pruni Virginianæ Fluidum.

ACIDUM HYDROCYANICUM DILUTUM, U. S. P. Contains 2 per cent. of anhydrous acid. Process of U. S. P. with ferrocyanide of potassium and sulphuric acid. Heating; condensation; luting; reason for placing water in receiver; method of reducing the strengh to 2 percent; method of securing stoppers of vials; chemistry of hydrocyanic acid.

Extemporaneous process of U. S. P. with cyanide of silver.

Strength of the acid of London Pharm. 2 per cent.

Strength of the acid of Dublin Pharm., 2½ per cent.

Strength of the acid of Edinburgh Pharm., 3·2 per cent.

Strength of the acid by Scheel's, process 5 per cent.

How to preserve hydrocyanic acid.

GAULTHERIA PROCUMBENS, U. S. P. Wintergreen.

OLEUM GAULTHERIÆ, U. S. P., is obtained by distillation of the leaves with water. Its remarkable chemical nature, being the methylic ether of salicylic acid. Can be made artificially. Action of potassa on it. Artificial rose water made from it.

BETULA LENTA. The bark contains *gaultherin*. Its relations to oil of gaultheria. Preparation. Properties of volatile oil the same as those of gaultheria oil. Uses.

SPIRÆA ULMARIA, or meadow sweet. Volatile oil. Its relation to salicyle. Is itself salicylous acid. Uses.

Volatile Oils of Cruciferous plants are sulphuretted oils.

SINAPIS NIGRA, U. S. P. Black Mustard seed. Contains sweet fixed oil, vegetable albumen, myrosin, *myronate of potassa*, sugar and sinapsin. By reaction between myronic acid and myrosin (a kind of emulsin) the volatile oil of black mustard is developed. It does not pre-exist.

Myronic acid and its potassa salt, contains carbon, hydrogen, nitrogen, oxygen and sulphur, is a syrupy, uncrystallizable liquid, soluble in water, alcohol and ether.

Oil of Black Mustard. Its preparation, properties, volatility, density and intense acrimony. It is the sulphocyanuret of allyle. Forms thiosinamin with ammonia. Thiosynnamin. Sinnamin. Sinapolin. Distilled with potassium it yields sulphuret of allyle, or oil of garlic. Uses in pharmacy of oil of mustard. Composition. $C^8\ H^5\ N^2\ S^2$. Specific gravity.

Distilled water of mustard. Powder. Sinapisms.

SINAPIS ALBA, U. S. P. Its composition. Yields no volatile oil by reaction with myrosin, but a sulphuretted nitrogenous principle of great acrimony. The taste of mustard and sulphocyanic acid is found at the same time in the liquid.

ALLIUM, U. S. P. Garlic. Volatile oil of garlic; its chemical relations.

Acetum Allii.

Syrupus Allii, U. S. P.

ARMORACIA, U. S. P. Horseradish. Volatile oil.

Infusum Armoraciæ Compositum, U. S. P.

Resins, Oleoresins, Gum-resins and Balsams.

Resins are solid substances, frequently associated with volatile oils, from which they are usually derived by a process of gradual oxidation.

When both are abundant a fluid oleo resin results.

When associated with gum, water, cautchouc, &c., a gum-resin is formed.

When a solid or fluid oleo-resin contains benzoic or cinnamic acids it is called a balsam.

Natural resins are not homogeneous, but usually consist of two or more resins.

Physical character of resins, as regards friability, electricity, etc.

Solubility in alcohol, ether, chloroform, volatile and fixed oils.

principle. Chemistry of the oil remarkable.

Confectio Rutæ. London.

Extractum Rutæ. Oleum Rutæ Fixum.

TANACETUM, U. S. P. Contains volatile oil and acrid bitter principle. The volatile oil is poisonous.

ERIGERON CANADENSE. U.S.P. Volatile oil and extractive. The oil is very light, and is used as an anti-hæmorrhagic.

SABINA, U. S. P. Tops of Juniperus sabina. Savin tops contain much volatile oil, which is poisonously acrid. Is a hydrocarbon, and associated with an acrid resin. The *powder* and *extract* are used.

Ceratum Sabinæ, U. S. P.

JUNIPERUS. Fruit of Junip. communis. Contains volatile oil, resin, extractive, wax, and saccharine matter.

Oleum Juniperi, U.S.P. is a hydrocarbon, most abundant in unripe berries. Old berries are resinous and less oily. Commercial oil from leaves and fruit together.

Spiritus Juniperi Comp., U. S. P.

Infus. Juniperi Comp., (Am. Journ. Ph., vol. XXV. p. 205.)

SERPENTARIA, U. S. P.

Contains volatile oil, soft resin and bitter extract. Wiegand found Aristolochia reticulata strongest.

Infusum Serpentariæ, U. S. P.

Tinctura Serpentariæ, U. S. P.

Fluid extract.

BUCHU, U. S. P. Leaves of Barosma crenata. Contains volatile oil, resin, and extractive. The volatile oil mainly active.

Infusum Buchu, U. S. P.

Tincture, Fluid Extract, &c.

CIMICIFUGA, U. S. P. C. racemosa. Contains a volatile principle and resin. Latter called *Cimicifugin* or macroytin.

Tincture, Infusion, Fluid Extract.

CROCUS, U. S. P. Saffron. Stigmata of Crocus sativus. Contains volatile oil and coloring matter called polychroite.

Powder, Tincture, Syrup, Infusion.

VALERIANA, U. S. P. Root of Valeriana officinalis.

Composition.—Volatile oil, valerianic acid, bitter resin, extractive, starch, &c.

Oleum Valerianæ, U. S. P. Its complex nature. Contains bornein, borneol, valerol and valerianic acid.

Preparation of the volatile oil.

Preparation of the acid from valerian.

Valerianic acid. Properties and tests. Its hydrates. Preparation from fusel oil by the process of the Dublin Pharmacopœia. Valerianate of soda. Valerianate of zinc. Valerianate of iron. Valerianate of quinia. Valerianate of bismuth. Valerianate of morphia.

Powder of Valerian. Distilled water.

Infusum Valerianæ, U. S. P. Syrup.

Tinctura Valerianæ, U. S. P.

Tinctura Valerianæ Ammoniata, U.S.P

Extractum Valerianæ Fluidum, U.S.P.

Extractum Valerianæ.

Volatile Oils not Pre-existing in Plants, but the result of Reaction with Water.

AMYGDALA AMARA, U. S. P.

Composition.—Fixed oil, emulsin, amygdalin, uncrystallizable sugar, gum, &c.

Amygdalin. Its characters. Its remarkable composition and reaction with emulsin and other bodies. Its preparation.

Emulsin. Composition, preparation, coagulability by heat, &c.

Oleum Amygdalæ Amaræ, U. S. P. Preparation. Reaction requires time. Specific gravity of the oil. True oil not poisonous when freed from HCy. Its purification from prussic acid. It is the hydruret of benzyle. Chemical qualities and characters of the oil of bitter almonds. Artificial oil of bitter almonds or nitro benzole used as an adulteration; alcohol also used.

Aqua Amygdalæ Amaræ, U. S. P.

Aqua Amygdalæ Amaræ, of European Pharmacy.

Liquor Amygdalinæ, of Liebig and Wohler. Its prussic strength.

Aqua Lauro-Cerasi. Composition and preparation.

Syrupus Amygdalæ, U. S. P. Orgeat syrup. Its preparation and characters.

PRUNUS VIRGINIANA, U. S. P. Wild cherry bark. Bark of Cerasus serotina.

Composition. — Amygdalin, tannin, gallic acid, resin, starch, an emulsoid

Tinctura Zingiberis, U. S. P.

Syrup Zingiberis, U. S. P. By the officinal process. By Finley's process.

Piperoid of Ginger. (Beral.) Troches of ginger. Infusion of ginger.

Drugs Characterized by pungent soft Resin and Volatile Oil associated.

PIPER, U. S. P. The unripe fruit of *P. nigrum*. Composition.—Piperin, volatile oil, soft resin, extractive, malic and tartaric acids.

Piperin. Its characters, crystallization, solubility, color, taste. Discovered by Oersted in 1819. Chemical nature. Results of its decomposition by heat and alkalies. Picolin. Its ultimate composition and preparation.

Volatile oil. A carbohydrogen. Its chemical characters.

Ext. Piperis fluid, U. S. P. Oil of Black pepper of commerce. Contains but little of the volatile oil. Its preparation and characters. Powder.

Confectio Piperis nigri. Ward's paste.

PIPER LONGUM. Its nature and characters.

CUBEBA, U. S. P. The dried unripe fruit of P. cubeba. *Composition*.—Cubebin, soft resin and volatile oil.

Cubebin. Characters; crystallization; contains no nitrogen; Its preparation.

Oleum Cubeba, U. S. P. Preparation properties, color and composition.

Extractum Cubebæ Fluidum, U. S. P. (Oleoresinæ cubebæ) is an ethereal extract. Cubebin separates by standing.

Powder. Quality, tests.

Tincturæ Cubebæ, U. S. P. Spitta's lozenges.

CAPSICUM, U.S.P., (dried fruit of Capsicum annuum, and baccatum.

Composition. Fixed oil, pungent, soft resin, coloring matter, &c.

Capsicin. Its nature.

Oleo-resinæ Capsici, or ethereal fluid extract.

Tincture Capsici, U. S. P.

Infusum Capsici, U. S. P.

Trochisci Capsici.

PYRETHRUM. U. S. P. Root of Anthemis pyrethrum.

Composition. Volatile oil. Fixed oil. Soft acrid resin or *pyrethrin*. *Inulin*

Tinctura Pyrethri. Not officinal.

Extract by alcohol, used for toothache.

Xanthoxylum, U. S. P. Prickly ash; bark of X. fraxineum.

Xanthoxylin of Dr. Staples. Oleoresin by ether.

Decoction. *Tincture*. Not officinal.

Drugs Characterized by Containing Volatile Oil, Bitter Principle, and Extractive.

HUMULUS, U. S. P.

LUPULINA, U. S. P. Chemical composition of Lupulin. Volatile Oil, resin, bitter principle, and valerianic acid.

Nature of the volatile oil and resin.

Valerianic acid a constituent.

Lupulite, the bitter principle said to be alkaline.

Tinctura Humuli, U. S. P.

Tinctura Lupulinæ, U. S. P.

INULA, U. S. P. Root of Inula Helleniun.

Composition. Volatile oil, hellenin, inulin, soft, acrid resin, bitter extractive.

No officinal preparations.

CALAMUS, U. S. P. Rhizome of Calamus aromaticus. Volatile oil, acrid-resin, &c.

ABSINTHIUM U. S. P. Wormwood; containing volatile oil, bitter resinoid matter called absinthiin. Syrup tincture and infusion used.

Aromatic Wine contains it. A fixed oil by infusion is made in Europe.

ACHILLEA MILLIFOLIUM. Yarrow contains a blue volatile oil and extractive.

ANTHEMIS. U. S. P. Chamomile. Contains volatile oil and bitter extractive.

Infusion, U. S. P. Syrup and extract.

Fluid Extract.

SANTONICI SEMEN. Flowers of Artemisia santonica. They contain santonin and volatile oil. Properties. How prepared. Chemical nature. Used in troches.

CHENOPODIUM, U. S. P. Seed of C. anthelminticum, volatile oil, resin, and bitter extractive.

Oleum Chenopodii, U. S. P.

RUTA, U. S. P. *Rue*. Contains volatile oil, inulin, extractive and acrid

Anisum, U. S. P. The fruit of Pimpinella anisum.

Oleum Anisi, U. S. P. Its preparation and characters.

Aqua Anisi. The volatile oil of Illicium anisatum, or Star-anise of the East Indies, is generally used instead of the true anise oil.

Coriandrum, U. S. P. Fruit of Coriandrum sativum.

Oleum Coriandri.

Aqua Coriandri.

Cyminum. London Pharm. Fruit of Cuminum cyminum.

Oleum Cymini. The oil of cumin seed has a peculiar chemical character.

The Aromatics Proper.

Camphora, U. S. P. A stearoptene derived from Camphora officinarum; two kinds of camphor, the officinal, and that from Dryobalanops camphora.

Oil of Camphor, from Camphora officinarum, is an oxide of camphene, obtained by distillation from the leaves. Its composition and uses. Properties of camphor. Action of NO_5. Camphoric acid. Solubility in water.

Oil of camphor from Dryobolanops camphora is a hydrate of camphene.

Effect of camphor on resins and gum resins. Powder. Tincture. Emulsion of camphor with gum and sugar. Emulsion with oil, gum and sugar. Emulsion with myrrh. Solution in chloroform.

Aqua Camphoræ, U. S. P. Its mode of preparation.

Linimentum Camphoræ, U. S. P.

Dentifrice. Aromatic vinegar. Pills, plaster, and ointment.

Cinnamomum, U. S. P.

Cinnamomum Zeylanicum, (Ceylon.)

Cinnamomum Aromaticum, (Chinese.) Composition of the bark.

Oleum Cinnamomi, (Ceylon.) Its chemical nature. Is a hydruret of cinnamyle. Yields cinnamic acid by oxidation.

Oleum Cinnamomi, U. S. P.,(Chinese.) Properties, adulterations and tests.

Spiritus Cinnamomi, Dublin Pharm.

Pulv. Cinnamomi.

Aqua Cinnamomi, U. S. P. Its preparation.

Tinctura Cinnamomi, U. S. P.

Tinctura Cinnamomi composita, U.S.P. Uses of cinnamon as a *carminative* and *adjuvant*.

Sassafras, U. S. P. Bark of the root of Laurus sassafras.

Oleum Sassafras, U. S. P. Its properties and preparation. *Specific gravity.* Chemical characters.

Pulv. Sassafras. For dentifrices.

Canella, U. S. P. The inner bark of Canella alba. It contains volatile oil, resin and bitter extractive. The compound nature of its volatile oil, which consists of a neutral and an acid oil. Its chemical characters. Used in powder of aloes and canella.

Caryophyllus, U. S. P. Unexpanded flower buds of Caryophyllus aromaticus. They contain volatile oil, resin and tannin.

Oleum Caryophylli, U. S. P. Its nature. Acid oil. Neutral oil. Eugenate of potassa, etc. Preparation of the volatile oil by steam, heat.

Infusum Caryophylli, U. S. P.

Tinctura Caryophylli.

Pimenta, U. S. P. Volatile oil, &c.

Oleum Pimentæ, U. S. P. Its chemical nature.

Aqua Pimentæ, with volatile oil and by distillation.

Spiritus Pimentæ, U. S. P.

Cardamomum. Fruit of Elettaria cardamomum. It contains of fixed oil and volatile oil about ten per cent. Oleum cardamomi. Its nature, &c. Ethereal extract of cardamom. Powder. Difficulty of its preparation. Why?

Pulvis Aromaticus, U. S. P.

Confectio Aromatica, U. S. P.

Tinctura Cardamomi Comp., U. S. P.

Macis, U. S. P. Arillus of the nutmeg.

Myristica, U. S. P. *Nutmegs* are the kernel of M. moschata.

Volatile oil. Its characters and uses.

Expressed oil. (See fixed oils.)

Powder, liability to to change.

Spiritus Myristicæ, U. S. P.

Asarum Canadense, U. S. P. The root. Contains volatile oil and acrid bitter resin.

Zingiber, U.S.P. The rhizome of Zingiber officinale. Ginger owes its virtues to a pungent resin and volatile oil. Now these are the characteristics of the next *class*, and ginger may be looked upon as the connecting link between them.

AURANTII CORTEX, U. S. P. *Composition.*—Two kinds, bitter and sweet; both officinal.

Oil of Orange peel. Its preparation by grating, expression and clarification. Tendency to spoil by exposure. Why? Different from distilled oil of orange. Why? Yield, chemical characters, &c. &c.

Confectio Aurantii, U. S. P. Preparation and uses.

Syrupus Aurantii Corticis, U.S.P. Preparation. Its preparation by Finley's process with tincture and magnesia.

Syrupus Succi Aurantii. Preparation.

Tinctura Aurantii Corticis. Preparation from sweet and bitter orange peel.

FLORES AURANTII.

Orange flower water. Varieties, single, double, quadruple, &c.

Volatile Oil. Oil of neroli, different from that in the distilled water. Preparation, &c.

Syrup of Orange flowers. Orange buds. Issue peas. Oil of orange leaves. Essence de petite grain.

LIMONIS. *Limonis Cortex.* Its uses in medicine.

OLEUM LIMONIS, U. S. P. Its preparation, properties, chemical composition, adulterations and tests.

Tinctura Olei Limonis. (Essence of lemons.) Made with deodorized alcohol.

OL. BERGAMII, U. S. P. Characters, uses, tests, preparations, &c.

OIL OF CITRON.

OIL OF LIMES, &c.

LABIATÆ, or *Mint tribe.*

An extensive tribe of plants characterized by affording volatile oils, and sometimes in distinct cells. *All oxigenous.*

MENTHA PIPERITA, U. S. P. Culture on a large scale for its volatile oil. Uses.

Oleum Menthæ Piperitæ, U. S. P. Its characteristic properties; its preparation, uses, tests and adulterations.

Tinct. Olei Menthæ piperitæ, U. S. P.

Aqua Menthæ piperitæ, U. S. P.

Troschici Menthæ piperitæ, U. S. P.

MENTHA VIRIDIS, U. S. P. Its culture. Preparation of the volatile oil.

Oleum Menthæ Viride, U. S. P.

Tinctura Menthæ Viride.

Aqua Menthæ Viride.

ORIGANUM VULGARE, U. S. P. Its volatile oil not found in commerce.

Origanum Majorina, Sweet marjorum, contains volatile oil.

Thymus Vulgaris, Volatile oil, sold for oil of origanum in commerce.

MONARDA, U. S. P. *Monarda punctata.*

Volatile oil, U. S. P. Preparation, yield, properties. Its stearoptene called Monarda camphor. Properties.

Monarda Didyma. Coloring matter of its flowers. Volatile oil like bergamot in odor.

ROSMARINUM, U.S.P., from Rosmarinus officinalis.

OLEUM ROSMARINI. Its characters, tests and adulterations. Prepared from the tops by distillation.

Spiritus Rosmarini, U. S. P.

Essentia Rosmarini, Dublin Pharm.

LAVANDULA, U. S. P. Flowers and whole plant. Culture at Mitcham in England.

Oleum Lavandulæ, U. S. P.

Volatile oil of flowers, of leaves. Oil of spike. Preparation at Mitcham on a large scale. Its adulterations and tests.

Spiritus Lavandulæ, U. S. P. Preparation.

Spiritus Lavandulæ Compositus, U.S.P. Preparation.

HEDEOMA, U. S. P. Hedeoma pulegioides.

Ol. Hedeomæ, U.S.P. Its characters, etc.

SALVIA, U. S. P. Salvia officinalis.

Infus. Salviæ. Preparation and uses.

Syrup. Salviæ. Preparation and uses.

MARRUBIUM, U. S. P. Bitter principle and volatile oil.

Infusion. Syrup.

MELISSA OFFICINALIS, U. S. P. Infusion.

PATCHOULY. Volatile oil of Pogostemon patchouly, &c.

AROMATIC UMBELLIFERA. The fruit or seed vessels of many of the umbellifera contain a volatile oil, as cummin, anise, &c., and many that are not classed with the aromatics, contain oils, as conium, cicuta, &c.

FŒNICULUM, U. S. P. The fruit of Fœniculum vulgare. It contains volatile oil and fixed oil.

Oleum Fœniculi, U. S. P.

Aqua Fœniculi, U. S. P.

ACETUM DISTILLATUM.
Distilled Vinegar, U. S. P.
Characters and tests.

SUCCULENT BERRIES.
Composition.—Acids, Sugar, Pectin, &c.
Pectin. Its properties and uses.
Pectic Acid. How made; nature. Its use for jellies. Extraction of juices by pressure. Their fermentation.

RASPBERRIES. Fruit of Rubus Idæus. Composition.
Juice. How prepared to keep by the method of Appert.
Syrup. Its preparation.
Vinegar. Its preparation.

STRAWBERRIES. Fruit of Fragaria vesca. Composition.
Juice. Its preparation. Distilled water.
Syrup. Preparation of this.
Strawberry Essence.

BLACKBERRIES. Fruit of Rubus villosus. Composition.
Syrup. Wine.
Compound Syrup. With astringents.

MULBERRIES. Fruit of Morus nigra. Composition.
Syrupus Mori, Lond. Pharm., from juice.

CURRANTS. Fruit of Ribes rubrum. Composition. Wine.
Syrup. Clarification from Pectin with cherries.
Currant jelly.

GOOSEBERRIES. Fruit of Ribes grossularia. Composition of; preparation of syrup.

PINEAPPLES. Fruit of Bromelia ananas. Composition.
Preparation and clarification of juice.
Syrup of juice. How prepared.

Volatile Oils.

1. A numerous class of principles, very widely distributed in the vegetable kingdom, and which are the general cause of the odor of flowers and other parts of plants.

2. All parts of plants yield them in different instances.

3. Some plants contain several oils in different parts.

4. They occur sometimes in distinct cells.

5. Sometimes in the general juices.

6. Sometimes with resin and with fixed oils.

7. And they exist generally ready formed.

8. Sometimes generated by reaction of ingredients occurring naturally in separate cells.

9. Proximately consist of eleoptenes and stearoptenes.

10. Eleoptenes generally carbohydrogens.

11. Stearoptenes generally crystallizable, and contains oxygen.

12. In ultimate composition they consist of carbon and hydrogen, or carbon, hydrogen and oxygen, and sometimes of carbon, hydrogen and oxygen with nitrogen or sulphur.

13. Some oils consist of an eleoptene and an acid heavy oil, as oil of cloves.

14. Some oils are ethers of organic acids, as the oil of gaultheria.

Properties of Volatile Oils.

Color. Variable, often the result of oxidation.

Odor. Their most characteristic quality. They can be deprived of it by rectification from lime, but it returns by reoxidation.

Taste. Very variable in different oils, but a good character of each in particular.

Density. Varies from ·847 to 1·173; increases by age from oxidation.

Solubility in menstrua. Oxigenous oils are most soluble in water and alcohol. Oils containing only carbon and hydrogen are least soluble.

Solvent power of Oils. On resins and other oils.

Action of light and air. They cause oils to thicken and oxidize. (Avoid exposure.)

Action of Alkalies. Generally unaffected; a few decomposed.

Action of Acids. Nitric and sulphuric acids generally decompose and resinify them.

Action of the Haloid bodies. Iodine, bromine, &c.

Adulteration of the Volatile Oils. 1. By alcohol. 2. Fixed oils. 3. Other volatile oils, tests, &c.

AURANTIACEÆ. *Volatile oils from plants of the Orange tribe.*

Citrus Aurantium. The orange affords several volatile oils and other products to medicine.

specific gravity; its composition and strength.

Acetum Vini. Codex.

Wine vinegar. How made.

Composition and uses.

POTASSÆ BITARTRAS, U. S. P. Cream of tartar.

Tartar, argols. Exists as such in the grape. Why deposited from wine. How purified to make cream of tartar.

Characters of pure bitartrate of potassa. Its adulterations and tests.

ACIDUM TARTARICUM, U. S. P.

Its preparation on a large scale.

Saturation of the free acid.

Decomposition of neutral tartrate of potassa. Decomposition of citrate of lime. Evaporation and crystallization of the acid solution.

Characters of pure tartaric acid.

Its adulterations and tests. Its chemical composition.

Potassæ Tartras, U. S. P. *Tartrate of potassa, Soluble tartar.*

Preparation; characters and composition.

Sodæ et potassæ tartras, U. S. P. *Tartrate of soda and potassa. Rochelle salt.*

Preparation, characters and composition.

Seidlitz powders. Composition.

Soda Powders. Composition.

Ferri Potassæ Tartras, U. S. P. *Tartrate of Iron and Potassa.*

Synonyms. Boule de Mars, Tartarized iron, &c.

Process, U. S. P. How conducted. Characters of the officinal salt. Percentage of iron in it. The crude salt of commerce.

Vinum Ferri.

Its preparation from iron filings.

Preparation from tartrate of iron and potassa.

Ferri Tartras.

Its characters and preparation.

Ferri et Ammoniæ Tartras.

Preparation by Procter's process. Its Characters. Compostion.

Antimonii et Potassæ Tartras, U. S. P. *Tartrate of Antimony and Potassa.*

Synonyms. *Tartar emetic, tartarized antimony.*

Process of U. S. P. Preparation of the oxide. Method of combining it with the cream of tartar.

Characters of the salt. Its adulterations. Tests of purity.

Vinum Antimonii, U. S. P. Its strength and preparation.

Unguentum Antimonii, U. S. P. Its strength and preparation.

LIMONIS. *Lemons.* (For the peel and volatile oil see class of volatile oils.)

Composition. Volatile oil, citric acid, mucilage, &c.

Lemon juice. Its composition.

Syrupus Limonis, U.S.P. Preparation.

Liquor Potassæ citratis, U. S. P. *Neutral Mixture.*

Its preparation from lemon juice; from citric acid; from citrate of potassa.

ACIDUM CITRICUM, U. S. P.

Preparation for commerce. Formation of citrate of lime. Decomposition of citrate of lime. Evaporation of acid solution. Its crystallization.

Characters of citric acid. Adulteration and tests. Composition. Uses in Pharmacy.

Potassæ Citras, U. S. P.

Citrate of Potassa.

Process of U. S. P., with bicarbonate of potassa. Its advantages over the process with common carbonate containing silica. Its uses and characters. Tests of purity.

Ferri citras, U. S. P.

Citrate of Iron.

Process of U. S. P. Characters; uses.

Citrate of Iron and Ammonia, Lond. Pharm.

Its preparation and characters.

Citrate of Iron and Magnesia.

Preparation and characters.

Citrate of Iron and Quinia.

Composition and preparation.

Citrate of Magnesia.

Soluble and solid salt. Its preparation and characters.

Liquor Magnesiæ Citratis, U. S. P.

Officinal process for its preparation; its characters; its alterations.

APPLES. *Malic Acid, Cider.*

The expressed juice of apples fermented is cider, and is used as a solvent due to its malic acid and alcohol.

Malic Acid, best prepared from Sumac berries; how prepared from Rhubarb stalks.

Bimalate of Lime. Its preparation. Isolation of malic acid; its characters, uses, composition.

Cider Vinegar.

Preparation and tests.

ALCOHOL, U. S. P. Specific gravity ·835 or 36° B. Characters, tests and composition.

Diluted Alcohol, U. S. P. Proof spirit, L. P. Contraction of volume. Uses. Deodorized alcohol, by charcoal. Atwood's alcohol.

Absolute alcohol, Ed. Ph. Process. Soubeiran's process.

Uses of alcohol in pharmacy.

1. As a solvent and antiseptic for permanent preparations.

2. As a solvent for extracting organic principles.

3. As a means of purification.

4. For the products of its decomposition by acids, etc.

Alcohol vinegar. Acetic fermentation. Reactions. Quick vinegar process. Its explanation.

ETHERS. Theories of etherification. Etherin theory. Ethyle theory of Liebig.

ETHER, U. S. P. Oxide of ethyle. Alcohol is then hydrated oxide of ethyle. U. S. P. process for making ether. Ether making temperature, 285°. Crude ether contains alcohol.

Washed Ether, called letheon, for inhalation. Advantage of steam pressure heat, as regards safety and control of process, to prevent formation of oil of wine. Characters of ether. Its specific gravity, boiling point, solvent powers, &c.

Oleum Ethereum, U. S. P. Heavy oil wine. Process of U. S. Pharm. Details of process. Rationale.

Characters of oil of wine. Specific gravity. Composition. Odor, taste, purity. Tendency to decompose.

Spiritus Etheris Compositus, U. S. P. Hoffman's anodyne,—U. S. P. formula. Its true characters. Dublin process, Edinburgh formula. Commercial Hoff. Anodyne. How made.

Sp. Ætheris Nitrici, U. S. P. U. S. P. process. Its rationale. Character of sweet spirits of nitre. Specific gravity. Tests. Impurities. Aldehyde. Nitric and Acetic Acids. Mode of preparation.

Acetic Ether. Mode of preparation. Characters.

Muriatic Ether. Mode of preparation and characters.

CHLOROFORMUM, U. S. P. Terchloride of formyl. U. S. process. Details.

Dr. Squibb's method for analysing products.

Characters of chloroform; boiling point; specific gravity; solvent powers; purity and tests. Composition; Uses.

Chloric Ether, or tincture of chloroform.

OXALIC ACID. Not officinal.

Its preparation from sugar and nitric acid.

Its preparation from starch.

Characters, tests, antidotes, uses.

MANNA, U. S. P. Belongs to the class of saccharine bodies. Its natural sources; mode of collection; commercial varieties.

Mannite. Its chief constituent.

Preparation of mannite. Its characters and composition.

Syrup of Manna.

Its constituents and specific gravity.

Acid Saccharine Fruits.

Various acidulous saccharine fruits are employed, indirectly or directly, in medicine. In these fruits uncrystallizable sugar exists, with one or more of the vegetable acids,—coloring matters, odorous matter, often containing pectin, mucilage, vegetable albumen and salts. The acids present are usually either citric, malic or tartaric. By virtue of the albumen the sugar readily undergoes the vinous fermentation, and their juices thus furnish fermented alcoholic liquids, of which *wine* is an instance.

THE GRAPE. Fruit of Vitis vinifera. Its Composition. The natural source of bitartrate of potassa. Dried grapes or raisins. Uses in pharmacy. When fermented, grape juice yields wine.

VINUM ALBUM, U. S. P. *Sherry*.

VINUM RUBRUM, U. S. P. *Port*.

White wines, how made—Madeira, Sherry, Teneriffe.

Red wines, why colored—Port, Claret.

Composition of wines. Spirituousness. How ascertained.

The terms dry, sweet and light, as applied to wine.

Bouquet of wines. Œnanthic ether.

Spiritus Vini Gallici, U. S. P.

Process of making brandy. Its

SASSAFRAS MEDULLA, U. S. P.

Its mucilage is not precipitated by alcohol.

Infusion.—By cold maceration.

A syrup of sassafras pith is made from the mucilage by saturating it with sugar.

CYDONIUM, U. S. P., *Quince seed.*

Its mucilage, like that of sassafras, is not precipitated by alcohol.

Decoction Cydoniæ, Lond. Ph.

SESAMUM, U. S. P., *Benne leaves.*

Mucilage analogous to that of sassafras pith.

HIBISCUS, ESCULENTUS. *Okra.*

Mucilage like that of the benne plant.

Sugars.

There are several saccharine substances, just as there are several starches and gums. Three are well recognized and extensively found, and to some extent convertible, viz.: cane sugar, glucose, and fruit sugar.

SACCHARUM, U. S. P., *Cane sugar.*

Its natural sources and preparation. Sugar cane, maple, beet-root, &c. Its crystallization and solubility. Its composition. Action of heat; of sulphuric and nitric acids; of alkalies; of lime and baryta; of vegetable acids; of ferments.

Grape Sugar. Its natural sources; artificial sources; solubility, crystallization, and composition. Action of acids and alkalies; of ferments. Tests for grape sugar.

Uncrystallizable Sugar, or sugar of acid fruits. Its relation to the preceding. Becomes converted into glucose under some circumstances. Source of the alcohol derived from fruits.

SYRUPS.

SYRUP U. S. P. *Simple Syrup.* Specific gravity. Its composition. Clarification of syrups by albumen. Filtration of syrups. Material used. Decoloration of syrups by animal charcoal. Dumont's filter. Proper concentration of syrups determined by a saccharometer. Their specific gravity.

Medicated Syrups. Any liquid capable of dissolving its own weight, or more, of sugar may yield a syrup, as saturated solutions of sugar in infusions, decoctions, vinegars, weak tinctures and wines. Mode of saccharization without heat. With moderate heat and with boiling.

Syrups of Juices. Strawberry, Raspberry, &c.

Syrups of Resinous Tinctures. Guaiac. Tolu, &c.

Syrups of Apothemic Extracts, as Krameria, Cinchona, &c.

Alterations which syrups are liable to undergo. Fermentation, its causes and results; mouldiness; loss of astringency, flavor and aroma by age. Effects of Hoffman's Anodyne and sulphurous acid in preventing fermentation. Tendency to crystallize arising from too much sugar or too alcoholic a menstruum.

Mode of keeping syrups in the cellar.

MEL DEPURATUM, U. S. P. *Honey.*

It consists of glucose and uncrystallizable sugar. Purification of honey.

Mellites and *Oxymellites.*

Solid preparations of Sugar. Conserves, Confections, Electuaries—Definitions and differences. *Troches*, or lozenges, *Saccharides, Candies, etc.*—Their preparation and uses.

Derivatives of Sugar by the action of Ferments and Acids.

Alcohol. Fermented alcohol known to early antiquity. Chinese supposed to have been early acquainted with the distillation of alcohol.

Distillation of alcohol originated in Germany in the middle ages. Called Aqua Vitæ.

Natural sources of alcohol are starch, sugars, and sugar of milk.

Crude alcohols of commerce are *whiskey, rum, arack, brandy, etc.*

Fermentation of grain. Malting. Mashing. Fermentation of worts.

Yeast, its nature and supposed mode of action.

Distillation of the fermented liquors.

Avoid acetic fermentation before distillation.

Low wines rectified to yield whiskey.

Preparation of alcohol from whiskey.

The analysing still; its action.

Amylic alcohol. Fusel oil, a residue; how purified; its nature. It is the Source of valerianic acid. (Which see page 144.)

extensive occurence in the vegetable kingdom. Starch granules vary in size and shape. Action of acids. Iodine. Infusion of malt. Heat, moist and dry. Strong NO^5 (Xyloidin). Tannic acid.

Modes of preparing feculas; generally by grating and washing.

Purification of commercial feculas by washing.

Decoctum Amyli vel Mucilago Amyli, its uses.

Dextrine, its manufacture by sulphuric acid and by malt.

HORDEUM, U. S. P. *Pearl Barley.*

Composition.—Starch, sugar, gum, gluten, hordein and fixed oil.

Pearling Barley. Barley flour.

Decoctum Hordei, U. S. P., its preparation.

Malt, its preparation. Diastase its active principle, its characteristics, &c.

CETRARIA, U. S. P. *Iceland Moss.* From Cetraria Islandica.

Composition.—Lichenin, cetraric acid, sugar, gum, lichstearic acid, &c.

Lichenin, a peculiar starch.

Cetraric acid, the bitter principle, removed by weak alkaline liquids.

Preparations.—Iceland moss paste and jelly.

Decoctum Cetrariæ, U. S. P.

Syrupus Cetrariæ.

CHONDRUS, U. S. P. *Carragheen*, from Chondrus crispus.

Chief constituent, a peculiar gelatinous principle, Carragheenin.

SALEP. The dried prepared bulb of Orchis mascula.

The nature of salep between starch and bassorin.

Powder. Difficult to pulverize. Used in making Castillon's powder.

Mucilage of salep. Jelly of salep.

SAGO, U. S. P. Source. Preparation. Powder used in medicine.

TAPIOCA, U. S. P. Source. Preparation.

MARANTA, U. S. P. *Arrowroot.*

Source. Preparation. Mode of purifying when musty. Varieties, Bermuda, West Indies, Sandwich Islands, Georgia, &c.

Gums and Mucilages.

Gums are natural exudations from various plants, usually trees, and consist of matter soluble and partially soluble in water. The soluble gums are chiefly composed of *arabin*, and the insoluble of *bassorin*.

Arabin is pure gum arabic. Its composition. Solubility in water. Reaction with subacetate of lead, caustic potassa, silicate of potassa, nitric acid. Capability of entering lactic fermentation; its composition like that of starch.

Bassorin, its insoluble quality, reactions with acids and alkalies, and effects of boiling it, etc.

ACACIA, U. S. P. *Gum arabic.* Derived from Acacia vera.

Powder should have two degrees of fineness, one for powders and the other for mucilage and mixtures.

Infusion of gum or gum-water, ℥j. to Oj.

Mucilago, U. S. P. Preparation; uses. Sp. grav. 10° B. Keeps best made from unpowdered gum.

Syrupus Acaciæ, U. S. P., its preparation and uses.

Jackson's Syrup, lozenges, pastes, &c.

TRAGACANTHA, U. S. P.

Gum Tragacanth. Composed of a peculiar arabin with bassorin

Powder, its preparation and uses.

Mucilago Tragacantha, U. S. P., its preparation and uses in pharmacy.

LINUM, U. S. P., *Flaxseed.*

Contains 20 per cent. of soluble gum, 10 per cent. of insoluble gum and 35 per cent. of fixed oil.

Farina Lini. Obtained by grinding. Should contain all the oil, and be fresh. Its tendency to get rancid by age. Why? How to test it when made from cake meal.

Infusum of Lini Compositum, U. S. P. How made.

ULMUS, U. S. P., *Slippery Elm Bark.*

Contains soluble and insoluble gum, a bitter principle, traces of tannin and much ligneous fibre.

Powders.—1st. Fine celular tissue, gummy, and used as a dietetic article. 2d. Coarse fibrous powder, employed for cataplasms.

Infusum Ulmi, U. S. P. Cold infusion by maceration sometimes preferred.

Use of slippery elm for bougies.

Lignin—Celulose.

Lignin is the most abundant proximate principle of plants, and constitutes their frame-work or skeleton, as ligneous fibre.

Its characters.—White solid. Composition $C^{24}H^{20}O^{20}$, isomeric with starch and dextrine, and affords dextrine and sugar by boiling with dilute SO^3.

LINTEUM. Lint. The prepared fibre of Linum usitatissimum. (An account of the preparation of lint for surgical purposes will be found in the American Journal of Pharmacy, vol. xxiii. p. 70.) Lint is nearly pure Lignin. The other products of the flax plant will be found under *mucilages and fixed oils.*

GOSSYPIUM, U. S. P. Cotton. The fibrous substance attached to the seed of Gossypium herbaceum and other species. Cotton is nearly pure lignin; is used medicinally in substance Its botanical history should be studied. Its most important pharmaceutical use is for preparing Collodion.

COLLODIUM, U. S. P. Solution of gun-cotton in ether. Discovered by Dr. Maynard, of Boston. 1st. U. S. P. process (Mialhe's) with nitre and sulphuric acid. 2d. Process with strong nitric and sulphuric acids. Strength of nitric acid important. Necessity of drying the gun-cotton well before adding to ether. (See U. S. Disp., Parrish's Practical Pharmacy and American Jour. Pharm., vols. xxix. p. 105.) Rand suggests adding Venice turpentine to prevent contraction of the pellicle. Livermore suggests to remove adherent water with alcohol to avoid drying. The student should study this subject practically, as it can be done on a small scale with great readiness.

WOOD.—*Products of its dry distillation.* By the dry distillation of wood, charcoal is obtained as a residue, and acetic acid and numerous volatile substances come over with it and are found in or associated with the tar. It will be convenient to study charcoal and acetic acid in this connection, and refer Tar and its products, creosote, etc., to the subject of Turpentines.

CARBO LIGNI, U. S. P. Its preparation in the arts for fuel, for gunpowder and medicine. Character of the wood important. Its lightness a good quality. Should be kept tight, owing to its tendency to absorb gases and vapors from the air. (See U. S. Disp.) Wood yields 17 to 23 per cent. of charcoal. Belloc thinks it should be washed before using it in medicine.

Pyroligneous Acetic Acid. Most of the commercial acetic acid is derived from wood. Besides the tar, the liquid products used in pharmacy are diluted acetic acid, pyroxylic spirit, and acetone. Oak, beech and chesnut afford the most acetic acid.

Acetic Acid, U. S. P., is isolated by saturating with chalk, the impure pyroligneous acid, filtering, evaporating, decomposing the impure acetate of lime with sulphate of soda, separating sulphate of lime and evaporating acetate of soda to dryness, heating to 500° F. to destroy tarry matter, and decomposing the resulting salt with SO^3 and distilling. The product is then reduced by dilution with distilled water till it has the sp. grav. 1·041. (See U. S. Disp. and Ure's Dictionary.)

Diluted Acetic Acid, U. S. P. 1 acetic acid to 7 water.

Glacial Acetic Acid, Dublin Pharm. Its mode of preparation from acetate of lead by means of gaseous H.Cl. Its crystallizability; tests for strength; uses. General tests for strength of acetic acid.

Chemistry of acetic acid should be here studied as a simple proximate principle. (See alcohol and wine.)

Acetone is obtained when acetate of lime is heated to redness in close vessels, and occurs in pyroligneous acid. (See Amer. Journ. Pharm., vol. xxiii. page 54.) Specific gravity, composition, characters, and tests.

Pyroxylic Spirit. Wood Naptha, Methylic Alcohol. Is obtained by distilling crude wood vinegar, after saturation with chalk, and by rectifying and purifying the product. Specific gravity; composition; characters; tests; uses.

Starch, or Fecula.

AMYLUM, U. S. P.

Starch, its organized structure; its

best learned from his preceptor, if he is so fortunate as to have one. They involve his intercourse with physicians and patients, teach him how far he may communicate the nature of a prescription to a patient when inquired of, and when to stop. They will point out how to proceed in cases where it is necessary to see the physician, from inability to understand what is written, or from a supposed error; so as not to involve the reputation of the medical adviser. And above all they will teach him constant self-possession, to do nothing without the assent of his will while engaged in dispensing, and thus avoid a common and serious source of mistakes.

A young man duly impressed with these views of duty will soon find himself growing in knowledge and gaining power over difficulties; he commands the respect of his employer, and the physicians who have occasion to consult him are struck with the depth of his answers, and feel a safety in trusting him. It is such a student that makes an invaluable clerk, and who, when the time arrives, becomes the successful pharmaceutist in a business point of view.

DRUGS AND PREPARATIONS,

Considered in reference to the order of studying them for a Student of Pharmacy.

The particular arrangement adopted in this Syllabus is nearly the same as that which has for years past been employed in the lectures on Pharmacy in the Philadelphia College of Pharmacy. The subjects are classed under the heads of their active or characteristic ingredients; and where a number of principles exist, closely allied in chemical or medicinal character, as the *tannins*, these are brought together. This idea was originally presented by Soubeiran, many years ago, but the following arrangement differs from his in many respects, and is better adapted to the American pharmaceutist.

Although the order in which drugs are here presented is intended more especially for guidance in the study of Pharmacy proper, yet, the student of Materia Medica, who is not following the course of a preceptor, will find it advantageous to adopt the arrangement here given, and pursue both studies together. In this way the interest developed by the botanical and commercial history, and the physical and medical characteristics of plants and their products, will give much aid in the study of the metamorphoses to which those drugs are subjected in the various processes of Practical Pharmacy, and make a stronger impression on the memory.

the student is familiar, by reading, with the relative power and qualities of medicines and their respective doses, that he is qualified to cope with the responsibilities that assail the dispenser of physicians' prescriptions.

Physicians vary much in their manner of writing prescriptions, in nomenclature, in abbreviations, and in doses. The student, therefore, should early fix in his mind, as far as possible, the synonyms of the important drugs and preparations, and familiarize himself with the signs and abbreviations in use. A list of the latter will be found in works on pharmacy that will materially aid his progress.

When a prescription has been compounded, it becomes necessary to label it properly, in a clear, distinct hand-writing. The beginner should early practice the writing of labels, so as to perform it quickly and neatly. It is of the first importance that it should be done *correctly*, as an error in the dose is almost as dangerous, in some cases, as a mistake in composition, and physicians not unfrequently have cause to disapprove of the careless and hasty manner in which this important operation has been conducted.

There is a difference of custom in regard to the finishing stroke in dispensing mixtures, pills and powders. While some tie over bottles with fancy paper, others place a seal on the top of the cork, and many others do neither, simply wrapping the vial in paper. Many think it a useless precaution to cap vials, and undoubtedly it often proves so; but in numerous instances children are sent for medicine, and are prompted by innate curiosity to taste the medicine or take it if sweet; an attempt they do not make if the vial is properly capped: and there is also a degree of assurance to the patient in the sick room who receives a vial with the cork unviolated, especially in countries where poisoning by design might seek this avenue to the life of an obnoxious patient. It is, therefore, to be recommended that such precautions be adopted and rendered habitual by the student, aiming at the acquirement of neatness and dispatch in every thing that relates to this very important engagement of dispensing prescriptions.

The rules that should guide the student as he progresses, are

emulsion in which the oily particles are visibly floating through it uncombined.

In mixtures of insoluble powders or resins suspended by mucilage the rule should be to get a smooth, uniform liquid, and not allow the vial to leave the shop with coarse, gritty particles to the great annoyance and disgust of the patient.

In connection with this subject the beginner should be early taught that it is disreputable to dispense a mixture, however well made, in a dirty bottle. For his own sake, when bottles are brought in an ill condition, he should carefully remove impurities, and not have the merit of his mixture injured in the view of the patient or physician, by want of a little preliminary trouble.

The use of distilled water is absolutely necessary in some cases, and it should be always ready at hand when wanted.

Other elementary operations in extemporaneous pharmacy there are, which deserve his attention, (but which will not here be noticed,) and which should be acquired more or less perfectly before the student is permitted to assume the responsibility of dispensing prescriptions unaided by an older head.

The position of paying-teller in a bank is considered one of great responsibility, because on his familiarity with hand-writing depends the safety of the bank funds. The position of a presciption clerk in an active business is a much more responsible one. An error of the former involves money; a mistake of the latter effects life or health. In assuming these responsible duties the beginner too often overlooks the risk, and believes himself rapidly advancing because he is engaged in duties beyond his station, and it has often proved a temptation fraught with the worst consequences. The ambition that suggests premature advancement as desirable, is an enemy to the student, which should be shunned as an evil adviser. Let him on all occasions, by observation and inquiry, learn *how* prescriptions are dispensed, and read them to become familiar with their signs and peculiar abbreviations and hand-writing, and let him assist as often as invited to do so, never failing to satisfy his mind by inquiry *afterwards;* but let him beware how he assumes without superintendence the risk of proceeding; for, whilst he may in many cases succeed, he *may* err and sow the seeds of death. It is only after

masses of about eight or ten grains weight, intended to be introduced into the rectum to relieve local symptoms. The excipient in this case is sometimes of a fatty nature, as ol. cacao, and sometimes extractive; but in all cases the consistence must be sufficiently firm for insertion, with the degree of softness that admits of readily ceding its medicinal influence to the part in contact.

The *lozenge* is another form, often used extemporaneously, though not frequently applied to permanent preparations. In each of these forms the student has need of practical study to become expert.

Plaster spreading is another mechanical operation that involves considerable skill, indeed, it often has happened that after years of practice it is performed bunglingly. It is advisable that the student should make essays on a small scale so as to become familiar with the degree of heat best suited, the proper amount of plaster to melt, and above all with the skill required to give an even and glossy surface to the plaster without penetrating the leather or corrugating it by undue heat.

The spreading of blisters, though less difficult than plasters, requires much practice to form them perfectly without soiling the back or edges. In dispensing plasters and blisters the manner of folding them in paper requires attention, so that the surface be protected most effectually. This is best done by a stiff sheet of paper folded so as to form an arch over the surface, held firmly by pins, and in all instances where directed by prescription the package should be labelled.

A very large number of prescriptions are for mixtures of various kinds; some requiring no particular skill, others involving some of the nicest manipulations, as in emulsions of fixed and volatile oils. As a general rule mixtures are either complex solutions, when they should be free from sediment or particles; or they consist of soluble and insoluble matter, when the association should be so nicely accomplished that simple agitation renders the mixture uniform in consistence, giving each dose its proper quantity of each ingredient. The preparation of emulsions is often very puzzling to the beginner, and he should early be taught that when unsuccessful *he must try again, and never dispense* an

to their compatibility. The beginner should notice the process in the hands of his superiors, and early take note of any points of interest that present. He will find it a useful practice when, afterwards, he has to wrestle with the difficulties and annoyances of an ill-advised prescription.

The consistence called pilular cannot be uniformly attained, owing to the physical and chemical qualities of the substances united, and it often happens that when proper at first, the deliquescent nature of the materials soon renders them soft and unfit for use. In such cases pills should be kept in close vials or coated with tolu, gelatin, or other protective substance. The skilful use of excipients is one of the best indications of a good apothecary, and it is recommended to the student to make it a special study, always reflecting on the nature of the ingredients in the mortar before adding the excipient, be it water, alcohol, honey, mucilage, oleo-resin or other substance.

As a general rule, when pills are above two grains in weight, it is desirable to keep their bulk to the least possible amount by using only so much of the excipient as will effect the purpose. It often happens that the apothecary has to perform the process of pill-making before his patient or customer. It need hardly be urged that the utmost nicety should be observed as regards cleanliness of implements and hands, that no unnecessary repulsiveness may be given to the dose. There is a sort of slight of hand manner of using the mortar and spatula in this operation, which every one should aim to acquire, but to which many never attain, by which the operation is performed almost wholly without contact of the fingers.

The grooves of the pill machine should be kept free from adherent particles, which not only prevent the pills from being spherical, but tend to contaminate them in substance or odor. When properly made and put in the box, with the powder to prevent adherence, the label should be written and applied at once, to prevent error by the possible interchange of boxes, which has often been the source of grave as well as ludicrous errors, where several prescriptions are in progress.

The *suppository* is another form of preparation allied to pills, and always extemporaneous, being elongated, slightly conical

Labels are of little use without paste. The proper consistence and preservation of this useful agent, and the tidy condition of the brush and pasting-slab, are marks of a well regulated counter practice, and add largely to the comfort of dispensing and the neatness and beauty of labels.

The prescription balance requires constant supervision to keep it in order; unless the utmost care is extended to preserve it free from dirt and dust, and especially the surface on which it stands, errors in weighing are liable to occur. The balance case should be furnished with suitable drawers for holding the weights, papers for folding powders, envelopes for single powders, capping papers, &c. Powder papers should be cut of uniform size and from smooth sized paper, not too stiff. There is, perhaps, no one item of dispensing that exhibits the neatnesss or the slovenliness of the dispenser so quickly as that of powders folded in boxes, both as regards the uniform size of the folded papers and the equable division of the material contained in them. The young apothecary should practice the division and folding of powders until he can vie with his more experienced companions. Important as are these outside features, yet more importance attaches to the fineness and intimate mixture of compound powders, especially when a minute quantity of an active substance like morphia, arsenious acid or strychnia, is to be mixed with more bulky ingredients. Always begin with the most active, and triturate it with a portion of the driest ingredients, and then gradually add the remainder, so as to insure a uniform dilution of the active by the inert.

When powders contain camphor or carbonate of ammonia, or are deliquescent, or easily oxidized, the dispenser should be provided with tin-foil and waxed paper, and these should be at hand in the balance case drawers.

The process of making pills, viewed as a portion of extemporaneous pharmacy, involves so many nice reactions, and requires so much tact in the suggestion and use of excipients, (or substances used to give proper consistency to pill masses,) on the emergency, that it is perhaps the most annoying portion of the dispenser's duties. This is owing to the fact that physicians attend more to the therapeutical fitness of substances in a prescription than

masses requiring particular excipients or manipulation, to note them for future use. The amount of information required to be an accomplished dispenser is very extensive and various, because he has not only to be familiar with the qualities and reactions, or incompatibilities of medicines and their doses and uses, but he is expected to know something about a thousand things interesting to the patient, or useful in the domestic economy of his patrons, who look upon him as a sort of oracle. The difference between a theoretical and practical dispenser is chiefly in the skill and knowledge learned by years of counter practice under the superintendence of experienced pharmaceutists; and it is mainly that he may get this valuable part of his education that our Colleges insist on the service of a regular apprenticeship in the shop.

Of the requisites for the dispensing counter, no one is more important than an ample supply of water. On this depends much of the comfort and cleanliness of the shop, and in nice prescriptions often determines their correct and perfect preparation. It should be a matter of pride with the junior in the shop to keep the *sink* and its *appurtenances* in good order. These appurtenances should be a shelf to drain mortars, two good sponges, wire hooks, quills and rods of wood armed with sponges, to facilitate the cleansing of bottles; and powdered pumice stone, muriatic acid, alcoholic solution of soap and liquor potassæ in suitable bottles for use, and towels. The depository for tin ware vessels, skimmers, spoons, &c., should be adjacent to the sink, and these should always be properly cleansed ready for use before they are put away. The habit of cleaning graduated measures immediately after using them should be early and thoroughly acquired, and no accomplishment speaks more plainly of good bringing up.

One of the earliest engagements of the beginner is the cutting of labels. On this apparently insignificant labor greatly depends the good appearance of vials and packages, and on the careful assorting of them, and alphabetical arrangement of them in their respective drawers, depends much of the safety and facility of the process of labelling medicines in the hurry of business. Labels should be cut evenly and with an equal margin all around whether they be round or square or irregularly curved.

the presence of his employer; and no temptation of this class should prevent him from giving his whole attention to each application for medicine, whether by prescription or otherwise. Especially should he avoid entering into conversation with bystanders so as to be led into error. Too much care cannot be given in correctly understanding what each customer asks for; and when any active agent is called for, it is a safe practice to repeat what was asked for, interrogatively, so as to elicit an affirmative reply. The caution of labelling every package or bottle sent from the shop is a good one, and the beginner should not permit himself to neglect it, merely to save trouble. Attention and politeness accorded to customers is readily appreciated by them, and soon wins their respect and confidence, without which the apothecary's apprentice is constantly mortified with the expressed suspicion of his incompetency, taking its origin in the many errors that have occurred by carelessness elsewhere.

The apothecary's shop is no place for loungers; and all employers should forbid the habit of persons frequenting their stores merely to hear news or gratify curiosity, to the imminent risk of interfering with the quiet and safe routine of the counter practice.

The apothecary should make it a point to extend any aid he is capable of to physicians when they call on him for advice or suggestion in reference to medicines, and the manner of dispensing them, to incompatibles, and to means of increasing the palatableness of medicines. Indeed, as his true functions make him the adjunct of the practitioner, as regards the preparation of remedies, he should give all reasonable exertion to execute the requests of the physician in a proper spirit.

It is an excellent plan for the beginner to have a note book ready at hand, and make a record of every occurrence of interest in the course of business; as regards quality of drugs; reactions in putting up prescriptions, or accidents in making preparations. It is also useful to keep a record of the *yield* in making extracts, volatile oils, &c., for future comparison. In dispensing prescriptions the most varied associations of ingredients are made, often furnishing information to the close observer not likely otherwise to be gained; hence the student should be wide awake, and not only observe and study out these, but in making mixtures and pill-

separation of the substance with which it is combined; and this separation is usually effected by the agency of a class of bodies having affinity for the associated substances, called *reducing agents* and *fluxes*. The first act by seizing on the substance associated with the metal, the others by combining with the impurities, and forming a slag, or composition lighter than the metal.

Reduction is also effected by certain gases under favorable circumstances, as when red hot oxide of iron is acted on by hydrogen, and moist chloride of silver by the same gas.

EXTEMPORANEOUS PHARMACY.

THE DISPENSARY.

The relation of the student or apprentice to the shop duties, viewed in reference to the medical profession, the community, and his employer's interest, is a subject that should be properly understood from the beginning, in order that those duties may be faithfully carried out in an honorable spirit.

There are many menial services which appertain to the first year of apprenticeship, such as opening and closing shop, sweeping and other cleansing, washing mortars, carrying bundles, washing windows and bottles, keeping the cellar and store-room in order, and many other items, all of which require daily and hourly attention, and which, if not attended to, soon cause dissatisfaction in the daily routine of business. The beginner should take as much pride in fulfilling these humble offices, as in any other part of his duty, and by doing so cheerfully, renders himself invaluable and respected. Good habits once fixed by practice, become a second nature, and these are learned and fixed by discipline. Too often it happens that the employer has no regularity in his discipline; such is a misfortune, and we would advise every young man to impose a course of action on himself, as regards the shop, rather than let himself get into a careless and slovenly way of doing things.

The *reputation of the shop* should be above all secondary considerations. The apprentice should identify his own reputation with that of the establishment, and by a jealous watchfulness let no duty escape unfulfilled. Consequently, pleasure in all its forms should be kept subordinate, as well in the absence as in

cabbage, and termeric solutions and papers is easily learned, and should be practised by the student.

Torrifaction is the act of roasting organic matter, in a heated vessel, so as to partially modify its chemical and medical qualities. Starch is roasted to get dextrine; gallic acid to get pyrogallic acid; rhubarb to destroy its purgative power.

Destructive distillation takes place when dry organic substances placed in a retort are heated to redness, so as to destroy existing compounds. The operation, viewed in relation to the volatile products, is destructive distillation; and in reference to the residue in the retort is *carbonization.*

Incineration.—When instead of operating in close vessels, organic matter is heated in red hot vessels, open to the air, so as to burn off all the organic particles, the process is called incineration. This process is employed in analysis to get the inorganic constituents of plants.

Calcination differs from incineration, merely in the fact that it is applied to inorganic substances, to remove volatile portions, or to oxidize others, in which case it is usually called *roasting.*

Deflagration is the act of burning substances by throwing them on a red hot surface, as in making antimonial powder.

Fusion.—When a solid is heated until it liquifies, it is said to melt, or undergo *fusion.* When certain salts are heated, they readily fuse, owing to the presence of a large proportion of water of crystallization. This is false, or aqueous fusion. True fusion occurs when, by aid of heat, the particles of a mass are so far separated as to overcome cohesion and assume the state of fluidity.

Fusion is effected in crucibles when a high heat is required. The material and structure of these are of much importance to the practical chemist, and merit attention from the student. Wedgewood, Hessian, black lead, iron and platina crucibles, are there found most useful. Platina, from its great infusibility, is invaluable for this purpose, but great care is requisite in their management, to avoid contact with certain metals, sulphurets, &c. The management of crucibles, and furnace operations in general will be found described in Morfit's Chem. and Pharm. Asso.

Reduction is a term used to express those operations by which a metal is reduced, or liberated to the metallic state, by the

7. Crystallization as a means of purification, is based on the fact that a solution of one salt is yet a solvent for another salt, so that the liquid in which the crystals form, though saturated with the same salt, is yet able to retain the saline impurities in solution.

8. The term *mother water* means the liquid drained from crystals after they have ceased to form, and frequently contains much of the substance yet in solution. The proper management of the residual mother liquids is the source of much of the profit in manufacturing chemicals.

9. Crystallization is sometimes effected by aid of other substances in solution, as biniodide of mercury by aid of solution of common salt. The student will find some useful practical directions for the growth of crystals, by Copney, at page 348, vol. xxiii., Am. Jour. Pharm.

Precipitation.—When one liquid added to another is followed by separation of solid matter, the separated substance is called a *precipitate;* the liquid added, the *precipitant*, and the act, *precipitation.* Precipitation is used as a means of analysis, and of obtaining certain substances in a pure and finely divided state.

The points requiring study are chiefly—The choice of the precipitant, the degree of concentration of the solution, the washing of precipitates by lixiviation, and the process of draining and drying them. Some of the nicest operations of analysis consist in determining when sufficient of a precipitant has been added, and the skilful use of test tubes is an accomplishment that should be acquired by every pharmaceutist.

Neutrallization is a term that is only applied in pharmacy to the act of bringing acids and bases to a neutral state, by saturating them each with the other, so as to destroy temporarily, their free acid and basic qualities. Acids and bases, when in solution, in a free state, affect certain vegetable colors like litmus, in a particular way, and by using papers tinted with these colors, the condition of a solution is readily ascertained. The determination of a neutral condition requires considerable practice where extreme accuracy is necessary, owing to the modifying effects of carbonic acid gas, and other substances. The operations of *alkalimetry*, *acidimetry*, and *chlorimetry*, depend mainly on the practice of this operation. The manner of making litmus, red

tubes sealed at one end, and many facts in regard to sublimation can thus be acquired in a cheap and ready way. Should he not have access to a chemical laboratory, the student will have to get his information from works on technology and manipulation, as Faraday, Morfit, Ure, and Wittstein.

Crystallization, as it applies to *practical* pharmacy, is the art or process of obtaining crystallizable bodies in crystals, with a view to their purity and beauty.

Crystallography, or the description of the forms of crystals and their measurement, is a science involving much mathematical knowledge, and practice with the goniometer. The pharmaceutical student is not required to enter minutely into crystallography, but he should be acquainted with the outlines of the science, the construction of the six systems or classes of crystals, and the mode of measuring the angles of crystals. The best regular treatise accessible to the American student will be found in Dana's Mineralogy, but a good concise view may also be obtained in Regnault's Chemistry, and Pereira's Materia Medica. The crystallization of chemical salts and other bodies is one of the most interesting portions of practical pharmacy, and one that can be practised at leisure periods on a small scale, with great advantage. The three modes of obtaining crystals are by fusion and cooling, by sublimation, and by deposition from solutions in water and other liquids. The latter is the usual method of obtaining crystals. There are a number of conditions favorable to the success of this process which should be studied, viz:—

1. The proper degree of concentration of the solution, dependent on the solubility of the substance, and ascertained by practice.

2. The more slowly crystals are formed, the larger and more regular they are obtained.

3. Deep hemispherical vessels are most favorable for crystallization.

4. The presence of solid substances favors crystalline deposition.

5. The solution when set aside should not be disturbed.

6. Sudden or rapid cooling, with agitation, produces small crystals.

and free from from bubbles. A uniformly thin bowl, and a tubular opening over its centre, are good points. Receivers should not be too thick when intended for direct condensation, as they are apt to crack. The various forms of plain, tubulated, and quilled receivers and adapters should be familiar. After providing the vessels, the points most deserving attention are the method of charging retorts, the means of joining apparatus, the means of supporting it, the arrangements for heating and refrigerating, hints in reference to concussions or irregular ebullition, incondensible gases, heating, etc.; all these require attentive practical study, in order to become efficient manipulators, and where this practice cannot be afforded in the way of business, it should be attained by experimental essays.

The joining of apparatus by cork-rings, and by means of gum-elastic tubes, requires care to do it neatly and efficiently, and should be practiced whenever opportunity offers,—success often depending, in analytical distillation, on the perfection of joinings. The generation and management of gases, is allied to and properly studied with distillation, especially that of condensing gases and vapors in liquids, as in the preparation of solution of ammonia. Woulf's apparatus and Welter's safety tube here come into notice and application, and the various forms of apparatus for making carbonic acid water as a beverage, and gas manipulation in general.

Sublimation differs from distillation in the fact that the product is always solid, and generally crystalline. Its object is either to purify volatile solids from fixed impurities, or as a means of obtaining volatile substances in process of manufacture.

The student should examine the subject in reference to the kinds of apparatus and instruments used, and their adaptation for substances requiring different degrees of temperature.

The most important point to be learned in sublimation, is the regulation of the temperature, of the heating, and of the condensing surfaces, so that the vapor shall not arrive too rapidly, and after condensation shall not be liquified. The condensing surface may be paper, glass, tinned iron, or earthen ware, according to the degree of heat developed, and the quantity operated on and the chemical nature of the substance treated. Various substances can be sublimed in a small way in glass

liquids for syrups, or other liquid preparations. The nature of the ingredients of such liquids will modify the process;—if a solution of aromatics, a gentle heat; if a saline solution, ebullition may be resorted to; if an extract is to be made, the water bath is required, &c. &c. There are so many ways during this operation, that a substance may be injured by indiscretion; and so much is gained by attention to well-known rules laid down in the treatises mentioned, that the student cannot too carefully acquire and attend to them.

The introduction of steam, as a heating agent, is one of the grandest improvements in practical pharmacy, and the modes of its application, though not often carried out in the shop, should be inquired into, and fully comprehended.

Dessication is the removal of moisture from damp solids, as in dry herbs, lozenges, precipitates, etc., and is performed in various ways, the principle point being to surround the substance to be dried with warm, dry air, which is replaced by new portions as fast as it becomes moist by absorption.

The classes of liquids requiring the process of evaporation, are—

1. Solutions of saline, or other crystallizable matter, to obtain crystals.
2. Solutions of extractive matter to obtain extracts.
3. Solutions for fluid extracts, to concentrate them to the given point.
4. Solutions for syrups, to reduce them to the proper measure.

Distillation differs from evaporation merely in its object, which is the volatile liquid, and not the residue. It requires for its conduction peculiar forms of apparatus, the elements of which are, a boiler, a condensing surface, and a vapor-tight communication between the two. Practically, we vaporize liquids in close vessels by heating them in one part, and in another part remove the heat thus added and regain the liquid, in order to free it from fixed impurities. The apparatus used are retorts and receivers, stills and worms or condensers. The materials of which they are constructed vary; retorts are usually of glass, though sometimes of porcelain, earthen ware, iron, lead, etc.; and stills, of copper, tin, platina, and sometimes of glass. The student should learn to choose retorts that have a proper shape and thickness,

2. *Rapidity of evaporation* is influenced by the state of saturation of the air in contact, being *inversely* as the quantity of vapor existing in it, when the *liquid does not boil.*

3. The boiling points of homogeneous liquids are uniform, provided the pressure is the same; but, if solid matter is in solution, the temperature rises until saturation is attained.

4. Liquids in vaporizing render a large amount of heat latent, which, on condensation, becomes again sensible.

5. The sensible and latent heat of vapor is a constant quantity.

6. The boiling point rises, owing to pressure, when a liquid is heated in a tight vessel.

7. The boiling point is affected by the cohesion and depth of the liquid, and by the nature of the material and surface of the vessel.

8. Evaporation below the boiling point is in ratio to the extent of surface exposed to the air.

9. Evaporation by boiling is in ratio to the extent of surface of the vessel exposed to heat.

The various modes of evaporation and apparatus for facilitating it occupy many pages in works on pharmacy. They are:

1. Spontaneous evaporation in vacuo over lime or sulphuric acid at the common temperature, (a process chiefly used in analytical operations).

2. Spontaneous evaporation in the open air, in shallow vessels, or on a revolving cylinder.

3. Evaporation by heat, artificially applied, varying from 100° to 212°.

4. Evaporation in vacuo with steam heat, so as to boil at a low temperature.

The student should carefully learn the various precautions to be used in conducting evaporation in capsules, flasks, water baths, etc. The manipulation varies with the object in view, and the character of the result, whether it be saline, extractive, or liquid. The directions given in the U. S. Dispensatory, and in Mohr and Redwood's Pharmacy, for preparing extracts, should be read and remembered. A large proportion of the evaporation required in the shop is in the concentration of

Tinctures as a class include a large number of preparations. They are usually made by maceration or percolation, the latter process offers very great advantages. Some few are made by digestion, and Dr. Burton has suggested a modification of maceration by employing a vessel with a diaphragm above so as to retain the ingredients in the upper stratum.

The merit of maceration is its simplicity, it involves less skill than any other method, an occasional agitation of the vessel, and the prescribed time, being the chief points.

Percolation is by far the most useful process for tinctures. 1st. Because it extracts the materials most thoroughly. 2d. It is most economical. 3d. It is the quickest; and lastly, saves the necessity of expression and filtration.

There are some cases, however, where maceration and expression are to be preferred. Tinctures are usually classed according to the menstruum used, into alcoholic, hydro-alcoholic, ethereal and vinous, according as alcohol, dil. alcohol, ether or wine, is employed.

In making vinous tinctures, the last portions of the tincture may be displaced with weak alcohol.

In studying medicines prepared by solution, it is convenient to classify them according to the menstruum used, thus:

Aqueous solutions.	Simple solutions, infusions, decoctions, &c.
Vinous solutions.	Wines.
Acetic solutions.	Vinegars.
Alcoholic solutions.	Tinctures with alcohol and dil. alcohol.
Ethereal solutions.	Ethereal tinctures and solutions.
Oily solutions.	Solutions in volatile and fixed oils.
Saccharine solutions.	Syrups, Mellites, etc.

Vaporization, as applied to pharmacy, includes the three operations of *evaporation*, *distillation* and *sublimation*.

The student should carefully study the principles involved in these processes, as exhibited in the chapters on heat, in works on chemistry or physics, and especially the conditions, which favor the formation, dissipation and condensation of vapors. Some of these principles may be briefly stated as follows:—

1. The *quantity* of vapor that will form in a confined space is *constant* for the temperature, and when an atmosphere is saturated, evaporation ceases, unless some circumstances concur to remove a portion of vapor by condensation.

their passage through the powders from above downwards, from stratum to stratum. This process merits the most careful study, by practice, so as not only to acquire a practical knowledge of of its ordinary details, but to learn the modifications requisite to apply it advantageously to all the various drugs usually extracted.

The points requiring especial attention are:

1. The proper degree of division of the powder, varying according to its nature.
2. Whether or not it should be previously macerated in a portion of the menstruum.
3. The manner of placing and compressing the powder in the percolator.
4. The regulation of the passage of the solution beneath.
5. The determination of the strength of menstruum proper in certain cases.
6. Mode of increasing the porosity of fine powders by sand, etc.
7. The mode of keeping a constant supply of menstruum in long operations.

The various forms of apparatus deserve a careful examination, and will be found figured in some of the books.

Simple solutions are solutions generally of mineral salts, of definite strength to facilitate prescription. Innumerable cases of simple solution occur in extemporaneous pharmacy. Physicians are constantly prescribing saline solutions to meet special cases; sometimes they direct a saturated solution without specifying the proportions; hence, the necessity of being able to know the proportions to use. This information can be obtained for all ordinary salts in the table of solubilities in Mohr and Redwood's Pharmacy, American edition.

The directions of the Pharmacopœia, and in the U. S. Dispensatory, in reference to infusions, decoctions, tinctures, wines and vinegars, should be read with care and remembered in practice, so that the spirit if not the letter should be carried out.

Experimental trials of formulæ for infusions and decoctions should be made, to become familiar with the processes. They are among the most easy preparations to make, but are frequently dispensed in an inelegant form from imperfect clarification.

occur in the shop, should be examined and understood by the student as he goes along. Mohr and Redwood's Pharmacy, and Morfit's Chemical and Pharmaceutical Manipulations, describe them very thoroughly in detail.

In studying this subject, it may be appropriately considered under the heads of furnaces and their arrangements; lamps and gas burners; blow-pipes and their management; steam apparatus for heating by jackets and coils; and the thermometer and its uses. Where gas can be obtained, its use as a source of heat is so convenient, effective and economical, especially in the summer season, that it is preferable to all others for those purposes to which it is applicable. With a burner six inches in diameter and a kettle protected at the sides with a jacket, one hundred pints of syrup can readily be made at one operation, *in the shop*, if desired, without inconvenience.

Solvents and the processes of solution.—By a solvent is understood a liquid capable of destroying the aggregation of a substance and causing it to assume the liquid state. The term is often applied to bodies in solution in liquids, which, of themselves, do not possess the power, as, for instance, when an aqueous solution of potassa is used to dissolve substances by virtue of its alkalinity. It is usual to consider solution as simple, when the original substance is unchanged, except in aggregation, and is re-obtained by evaporation when the liquid is volatile; and complex, when chemical reaction is involved affecting the nature of one or both. In either division of the subject, solution as a process has a larger application in practical pharmacy than any other operation, and the principles involved in it should be studied with care.

When a solid body, placed in contact with a liquid, disappears and assumes the liquid state, the phenomenon is called *solution*, and the liqiud a *solvent* or *menstruum*.

Solution is not confined to solids. One liquid may dissolve in another, and a gas will dissolve in a liquid.

When the substance is recoverable by evaporation of the liquid, the process is simple solution.

When chemical reaction occurs, without which solution could not occur, it is *chemical* or *complex* solution.

There are several axioms relating to solution:

not to disturb their sediments. Beginners most frequently overlook this, till taught by experience the trouble and delay its neglect occasions.

The Press, as an agent for extraction, is of undoubted value, and should be found in every shop. Its merit depends much on its construction and the appurtenances for directing its power. The simple screw press turned by a lever is sufficiently powerful for most small operations, yet often half its value is lost owing to the use of imperfect means of confining the material during the action of the press. These means must vary with the nature of the substance treated. In fibrous or spongy materials, the simple perforated pressing box and piston is appropriate; in mucilaginous and oily matter, canvas sacks or folded cloths between flat fluted surfaces is often to be preferred; and in feculent pulpy masses it is necessary to combine these by placing a bag within the perforated box. The details of this operation will be learned by practice and observation, and it is particularly recommended that the beginner should tax his ingenuity in carrying them out where the consistence of the material expressed offers an impediment to the extraction of its fluid parts.

The double screw press of Mohr, is well calculated for the use of canvas sacks; and for some purposes a simple lever press is superior to all others where a gradual and constant pressure is needed, as for instance in pressing gelatinous precipitates.

The whole subject of presses and expression, including the hydraulic and compound screw presses, should be carefully examined by the student as a part of his education.

Heat; its sources and management in pharmaceutical operations.—The nature and application of heat is a subject that demands a careful study, not only from its intrinsic practical importance but from its deep interest in a philosophical point of view. Heat is necessary in so many processes that it is absolutely requisite to know how to apply it, before you can carry them out. Apparatus for generating heat, and for regulating its influence, are therefore among the most important implements of the laboratory, as furnaces, stoves, lamps of various kinds, gas burners and steam heating arrangements. To these must be added, as collateral, water baths, sand baths, crucibles, blowpipes, etc. These instruments as described in books, and as they

of the several methods of folding a paper filter appropriate for different objects as described in Mohr and Redwood's, or Parrish's Pharmacy; he should note what is said there in reference to funnels, and filter supporters, and the manner of placing filters, filling them and supplying them. The various kinds of paper suitable for filtering should be examined; those free from coloring matter and those containing it; when to use one and the other; etc. Economy in the use of filtering paper should be early learned; a filter capable of holding a quart should not be used for a pint of liquid. It is well to keep paper ready cut for variously-sized funnels, which saves time and trouble and greatly economizes paper. The pieces should be retained for experimental filters or filter caps.

Of cloth for filtering.—Several kinds should be employed; cotton flannel for syrups or other liquids requiring an easily penetrable, but fine tissue; common cotton cloth free from *nap* for gelatinous precipitates. For some uses woollen flannel, cotton gauze, large meshed muslin, linen cloth for alkaline solutions, and for plasters and pulps wire cloth and hair cloth. It rarely happens that a paper filter is used a second time, unless occasionally for the same liquid, for special reasons, but in the majority of instances cloth filters are reused and require to be carefully washed. The beginner will feel much need of the knowledge of doing this easily as he proceeds, if he is at all disposed to learn the economy of his business; and as it involves a knowledge of solvents, it is by no means a study beneath his notice. To use a dirty strainer is disreputable; to use only new ones is extravagant. True economy dictates therefore that these useful media should be carefully refitted for service.

The Syphon.—Filtering is often largely avoided by recourse to the process of *decantation* viz.: by allowing liquids to clarify by standing, and then removing the clear portion without disturbing the sediment. The manner of doing this by pouring, by the *syphon*, and by lateral openings in vessels for the purpose, should be practised by all the varied means at his disposal. The skilful use of the syphon should receive attention. Much trouble is often saved in shop practice by acquiring a habit of carefully handling bottles containing liquids (tinctures, etc.) so as

the circle described by the pestle at the surface of the liquid is less than beneath, leaving space for the latter to easily regain its level.

Not the least important part of mortar manipulation is that of keeping them clean. This involves not merely the mechanical necessity of washing, but the knowledge of solvents necessary to remove various substances insoluble in water, with which they are constantly stained; and as this business falls to the lot of the last comer, it is his interest to inquire of his superior, and observe closely as he proceeds, so as not to be at a loss on the next occasion. There is no item in the details of shop cleanliness that speaks more powerfully to the public than that of using pure white mortars.

The Spatula.—Spatulas for general use are made of steel, but those of whalebone, horn, ivory and wood, are useful and appropriate in certain cases, and the well furnished shop is provided with them. To learn just when to use a metallic spatula, and when to use one of bone or wood, is a work of time to the beginner, based on a knowledge of the effect of various substances on the material of the spatula. Thus, he should not use steel with nitrate of mercury or iodine ointment, nor horn for caustic potash. Steel spatulas may be often used if not left long in contact with the material, and hence should be cleaned at once afterwards. Spatulas should be kept clean and bright by means of powdered pumice, and when in good condition are a favorable indication of the correct administration of shop details.

The accomplished pharmaceutist shows his teaching by the graceful manner of handling this instrument when used in connection with the mortar, the pill tile, and the ointment slab; but especially in filling boxes with ointment, which should be done without soiling their exterior.

The Filter and its appurtenances.—The filtering and straining of liquids is one of the most ordinary and important operations of pharmacy; and like the preceding, its skilful practice requires an attentive study of the nature and construction of filters and strainers, and of the relative properties liquids posess of penetrating them. The beginner should early become master

plications, constitutes an important practical lesson n pharmaceutical instruction. It is not the design of this Syllabus to teach this lesson; it can only be learned by manual practice and experience; but it may be useful to throw out a few hints to the beginner by way of cautionary advice. It is true that the novice can use the pestle—a day-laborer has often been called in to use it, where its weight has been great and the material treated crude; but to know practically how to contuse, to triturate, to combine by friction, to emulsionize, &c., requires practice and study. It is usual to leave the apprentice to pick up this practical knowledge from day to day as his services are brought into requisition, often without instruction as to details in the manipulation. It is particularly recommended to beginners that they consider these rudimentary practical lessons as of the first importance, that they practice each kind of process in which the mortar is concerned, until they can use it dextrously, gracefully and effectually, to accomplish the several objects in view, and not grow up to be clerks on salaries with these primary accomplishments so badly acquired as to give the impression that they are pretenders. A few of the maxims applicable to the mortar may be stated:

1. In contusion, avoid striking the sides of the mortar, let the blows be distributed uniformly on the material treated, and not chiefly in one spot.

2. In trituration, after the material is reduced to a coarse powder, let the pestle be held firmly with downward pressure whilst it is made to revolve spirally from the centre to the circumference, and from the circumference back to the centre, observing so to move the wrist that the axis of the pestle shall continue very nearly in the radii of the curve of the mortar. In this way the greatest amount of grinding action between the surfaces is obtained, and the powder reduced to an equal degree of fineness.

3. In making emulsions the pestle should be held between the thumb and two first fingers of the right hand, in such a manner that whilst the operator holds it with sufficient firmness to give the requisite rotatory motion, it has also a swinging motion as if in a movable socket. When this is done correctly, there is less liability to force the liquid over the sides of the mortar, as

can however be easily dispensed with. The student having procured a thin horse-hair or thread of silk, makes a loop in it, in which the solid substance is suspended, the other end of the thread being attached to the scaledish—of course the balance must be placed as a support sufficiently high to permit the suspended substance to increase itself in a vessel of water placed below without touching the bottom. The balance having been carefully adjusted by weights after attaching the solid, the latter is then immersed in water and weights added to the dish above it till the equilibrium is again established. The latter weights indicate the quantity of water displaced.

The specific gravity of a liquid is taken by weighing the contents of a vial known to contain 1000 grains of distilled water at 60° F., when the number of grains indicates the specific gravity without calculation; or a solid substance, as a piece of glass, may be first weighed in water and then in the liquid to be tested. The relative weights of the displaced liquids afford the data for calculating the specific gravity.

The various precautions to be taken to avoid error, and in weighing substances soluble in water, or in powder, will be found detailed in Mohr and Redwood's Pharmacy and other works on manipulation.

The *Hydrometer* is a glass instrument used to ascertain the specific gravity of liquids by placing it in them, when the specific gravity is indicated on a scale attached to the tube. The principle upon which hydrometers are constructed is, that all solid bodies that float on water or other liquids displace exactly an equal weight of the liquids; consequently, as the weight of the instument is constant, it most necessarily sink deeper in a light than in a heavy liquid, and the difference is read off on the scale. The pharmaceutical student should give his attention to the subject till he thoroughly understands it, and he will find himself amply repaid.

The Mortar and its accompaniments.—So important is the mortar to the operations of pharmacy, that it is used as a symbol of the profession, and occupies a prominent position on the certificates of membership of the Association, and various Colleges of pharmacy. To use it skilfully, in its several forms and ap-

Journal of the Philadelphia College of Pharmacy, vol. ii. pages 111 and 188, (1830,) taken from J. Quincy Adams' elaborate work on this subject.

Weighing in ordinary cases is a perfectly simple and easy operation, but when it becomes necessary to ascertain fractions of a grain, or in analysis to determine with accuracy the constituents of a compound, it becomes one of great delicacy, requiring much practice. The student is referred to Mohr and Redwood's Practical Pharmacy, and to Faraday's or Morfit's Manipulations for lucid instructions on this subject; and he is advised to practice with the best balance to which he has access, until he acquires the requisite facility. In weighing, the operator should be assured of the correctness of his balance, and constant attention should be given to the condition of the weights, when these are of small denominations, to avoid incorrect indications.

In using graduated measures of glass it is advisable to remember that accurate indications can only be obtained by holding the surface of the liquid in a level with the eye, whilst the axis of the measure is kept vertical. The beginner should practice measuring by observing how near a series of trials with the measure will be to a constant quantity, as determined by weighing. For minute quantities, Alsop's minim-meter—a graduated glass syringe of small diameter—is the most accurate instrument.

Specific gravity.—Among the subjects involving manipulation with the balance, that of taking the specific gravity of substances is one of the most important, and it is often an excellent means of determining their chemical character and purity. Specific gravity differs from ordinary gravity or weight, in being the relation of the weight to the bulk of the body. When a substance has a large bulk in proportion to its weight, it is called *light*, or has a low specific gravity; when the bulk is small compared to its weight it is *heavy*, or has a high specific gravity. This relationship of weight to bulk in liquids and solids is determined by ascertaining the weight of an equal volume of pure water at 60° F., and then dividing the weight of the body by the weight of its bulk of water, the quotient being the specific gravity.

The balance appropriate for taking specific gravities usually has one of its dishes shorter than the other. This convenience

THE MANIPULATIONS OF PHARMACY.

Of Weights and Measures, Weighing and Measuring.

It is of the first importance to the beginner to get a correct idea of the measures of weight and capacity used in the apothecary business. Circumstances in English history have entailed on the English and American pharmaceutist the use of two standards of weights; the *Troy* weight for mixing and dispensing, the *Avoirdupois* weight for selling and general commerce. He should therefore carefully learn the relative value of these, and ever bear in mind the *fact*, that when measures of weight are directed in the U. S. Pharmacopœia, it is solely the apothecary's or troy weight that is intended; and that the word *pound* invariably signifies *twelve* troy ounces of 480 grains each. By fixing these leading facts in the mind, with the tables of Troy and Avoirdupois weights he has learned at school, the student is soon able to avoid, instinctively, the misconstruction of the two standards.

The more advanced student should be familiar with the French decimal weights; which are coming gradually into use in the analytical laboratories of all countries, and which so frequently occur in the journals, that a knowledge of their value is needful.

The *measure of capacity* adopted in the United States Pharmacopœia is the English wine gallon and its divisions, which fortunately is also the measure legalized by the U. S. Government. But the student should be aware that in England this measure has been abandoned, and the Imperial gallon of 70,000 troy grains of water at 60° F. substituted in its place. Though divided into eight pints like the wine gallon, the Imperial pint contains nearly one-fourth more, and is divided into twenty fluid ounces. Hence a ready and frequent source of error when the formulæ of the British Pharmacopœias are compounded here. The authors of the U. S. Dispensatory, impressed with this liability, have noted the Imperial weight in parenthesis when it occurs. For information relative to the weights and measures used here and in European countries, the student is referred to the Appendix to the U. S. Dispensatory, to the introductory part of Redwood's Supplement to the Pharmacopœia, and to several papers compiled by Dr. Benjamin Ellis, and published in the

In thus speaking of the pharmaceutical student, as he *should be*, it must not be supposed that it arises from a false idea of what he *is*. It is indeed true that study, properly so called, is often times the last thing the *young* apprentice thinks of. Kept on the go from morning till night, and sometimes all the evening in addition, when cessation of physical labor occurs he is naturally more disposed to court Somnus than the Muses, or more inclined to the newspaper than the Dispensatory. This disinclination for study often arises from not possessing a friend to point out where to begin and what to read. If employers would take more interest in their boys at first as regards their reading, endeavoring to get them interested in subjects pertaining to their business, the latter would be much more likely to get their ambition excited to exertion. The value of a drug clerk in some positions is greatly enhanced by the possession of a kind of knowledge, the result of experience and reading, which enables him to take the place of his employer, in coping with the emergencies of business. Now, it is true that there are certain difficulties which recur so seldom that but one or two may happen during an apprenticeship; and if not learned then, no other opportunity may offer, until the apprentice, having become the clerk, finds himself compelled to act, or acknowledge his ignorance. It is therefore necessary for the apprentice, who desires to become a *master* in pharmacy, to be wide awake to every incident of the counter, gaining information daily by what he sees and hears and handles, and never hesitating to ask where he is in doubt, under the idea that it will be showing ignorance. It is for want of this kind of training and earnestness, that so many drug clerks are found illy qualified to take charge of a store; they are not equal to the numerous occasions where discretion and judgment are required; and after going from one employer to another, either abandon the business in disgust, or settle down into a second rate position as confirmed underlings.

It is to enable apprentices and others to avoid this humiliating result, and to stimulate them to honorable exertions in the pursuit of pharmaceutical knowledge, that the Association offers this Syllabus for their acceptance, believing that it will point out a practicable road to respectability, if not to eminence, in their profession.

The student, therefore, if he has had no preliminary instruction in chemistry, should be provided with a chemical dictionary, or glossary, and an elementary work on that science, so as to be able to enter a course of reading without waiting until he can obtain instruction by lectures or otherwise. It is not to be expected that the beginner can correctly understand *all* the terms used, even by aid of a dictionary, but very many he can thus master, and by study and experiment the most may be understood. It is better for him to progress slowly and *really*, than rapidly but superficially, and hence each difficulty should be wrestled with till cleared up, or set aside among "work for future effort," that it may be returned to with renewed vigor.

Mineralogy and Zoology are far less important to the pharmaceutist than chemistry and botany, and may be left to a later period, and then only entered on so far as to get a proper idea of their classification and arrangement, and of the species chiefly contributing to medicine, unless desired by the student.

Every pharmaceutical student should, at the outset, endeavor to form a *plan of study*. This plan will vary with the mental characteristics and kind of opportunity afforded to each. While one will have ample time and at stated periods; another will need to employ the brief and irregular intervals, which almost constant engagement in the shop and laboratory permits; but as, in either case, a plan regularly adhered to will greatly aid progress, it is recommended that each student should adopt the best one of which his circumstances admit.

This Syllabus will give a bird's-eye-view of what is to be studied, and the order in which it may be advantageously considered; yet it may be well to bear in mind that whatever facilities it may present, it is only an aid or scaffolding to get at the results of study, and not the thing itself, and when the sagacity of the student can adopt a better arrangement, he is free to do it. Where one student thus carves out his own pathway to the temple of knowledge, twenty will take the beaten track of others, and many more lack the energy and perseverance to keep on this well marked route. If any of the latter class should fancy that this Syllabus is a substitute for that exertion which the acquisition of knowledge requires, they will be greatly disappointed.

various knowledge required by the pharmaceutical student. But extensive as such works usually are, there are many details necessarily omitted, and much collateral information not comprehended, which, to the student, is requisite to fully understand the scientific part of that work.

In the shop, the beginner soon finds that the productions of almost every country are collected around him, and a laudable curiosity should lead him to inquire into their history, as well from a just desire to be able to explain it to others, as to enable him to convert them into preparations, with a full understanding of their several qualities and uses.

At the outset, therefore, the earnest pharmaceutical student should possess, or have access to, elementary works on chemistry, botany and natural philosophy, (unless his previous education should have included these branches,) because they will be needed to understand the language of the Dispensatory.

Botany.—Almost any elementary work on botany will serve the beginner, in reference to the terms used in the Dispensatory, but Dr. Gray's "First lessons in Botany and Vegetable Physiology," which contains a copious dictionary of botanical terms, is to be preferred, as it was written as an introduction to the author's Manual of Botany, which is appropriate for the more advanced student. However slightly the beginner may acquaint himself with the principles of botany at first, he should aim at its systematic study during his term of service, as well for its intrinsic interest and usefulness, as for its appropriateness to the accomplished pharmaceutist. Indeed, the pleasure derivable from the pursuit of botany is sufficient stimulus to many persons, independent of its usefulness; and its tendency is to induce excursions into the country, which are grateful as a relief from the confined atmosphere of the shop.

Chemistry.—Of chemistry it may be said that it is the foundation of all correct pharmaceutical knowledge; it is the key which unlocked those mysteries, which, during many centuries, were hidden in the language of the alchemists and philosophers of the middle ages—a language, the obscurity of which no doubt arose as much from ignorance of the real nature of the reactions they professed to describe, as from a disposition to give undue importance to the possession of the secrets.

SYLLABUS.

INTRODUCTION.

When a lad, or young man, has made up his mind to enter upon the business of a pharmaceutist or a druggist, he should be fully aware of the responsible offices it involves, and of the two-fold nature of the functions it requires to be performed, viz: those of a mechanical nature acquired by manual practice, and those of a scientific character, to be learned only by study in connection with that practice.

The phenomena which occur in the daily routine of the apprentice, though matter for wonder at the beginning, become familiar by repetition, cease to excite thought or inquiry, and he rests satisfied in ignorance of their nature. But when, during his practical lessons, a course of study is pointed out to him, he soon gets a key to much that was hidden, becomes interested in what he is doing, and progresses rapidly in proportion.

It often happens that the beginner does not enjoy the privilege of a friend at his side, to explain difficulties as they arise, and employers are sometimes as ignorant in these regards as the apprentice himself. It is to point out to these seekers after knowledge the route to obtain it, that this Syllabus has been prepared.

The sciences which are chiefly involved in the studies of the young apothecary, are botany, chemistry, and physics. The Dispensatory is a treatise on drugs and medicines, viewed in relation to their origin, botanical, zoological or mineralogical, their mode of collection, preparation and introduction into commerce, their commercial history, their sensible properties and chemical characteristics, their medical properties and pharmaceutical preparations and uses. The Dispensatory, therefore, contains the

SYLLABUS

OF A

COURSE OF STUDY,

INTENDED AS AN

AID TO STUDENTS OF PHARMACY,

WHO CANNOT AVAIL THEMSELVES OF REGULAR INSTRUCTION

BEING

A REPORT MADE TO THE AMERICAN PHARMACEUTICAL ASSOCIATION,

BY

WILLIAM PROCTER, JR.

Chairman of a Committee appointed for that purpose in September, 1856, consisting of

WILLIAM PROCTER, JR., EDWARD S. WAYNE,
CHARLES ELLIS, EDWARD PARRISH.

PREFATORY NOTE.

The American Pharmaceutical Association, being aware of the limited opportunities for theoretical instruction which appertain to the pursuit of Pharmacy, as usually conducted out of the large cities of the United States, as well as in very many stores within those limits, have deemed it advisable to issue this Syllabus of advices and studies, for the aid of all those beginners or apprentices whose position renders such aid useful and appropriate, in the hope that it will prove a valuable help to them in the prosecution of those studies so necessary to the pharmaceutist and druggist, and without which no dispensing apothecary is able to meet fully the rightful demands of the medical profession.

make pharmaceutical preparations; among them are men of deep observation, who, though sympathising in every advancement of Pharmacy, prefer to be unknown. We hope these will come forward with their contributions to pharmaceutical knowledge, feeling that no man is justifiable in holding back through timidity any discovery or improvement he may have made, and which might be of general benefit to the profession.

We admit as honorary members of our Association chemists and wholesale druggists, some of whom would do honor to any Association to which they may belong, but we discard quacks, one of the objects of our Association being, to use the language of the constitution, "To suppress empyricism, and as much as possible to restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries."

The Committee, appointed to report to your honorable body, feel that they have not accomplished the task in as elaborate form as they might have done had they more leisure to devote to the subject; but they hope that the next report on the Progress of Pharmacy, from St. Louis, will be more interesting.

Respectfully yours

ENNO SANDERS,
WM. H. DORNIN,
SAM. G. HENDEL,
JAMES O'GALLAGHER.

St. Louis, July 12th, 1858.

shown by members of the profession. It became highly necessary for some of us to take a stand to raise and hold the profession above petty local interests and jealousies; we have endeavored to do so and being much encouraged by the success which has already crowned our efforts, we are determined to persevere and hold together. We understand each other better now than we could possibly do before, and the experience of the past has proved to us how much good can be done by an Association of Pharmaceutists who have for their aim the general benefit of the whole profession.

The example shown to us by more efficient and capable men of the profession in our own country as well as abroad, stimulated us in our first arduous but now pleasing task; we are not worthy, we know, of having the cloak of a Galen, a Berzelius or an Orfila rest on us, but we venture to say, that we are not unworthy to dwell sometimes under the folds of their mantle.

Most of the chemicals used in dispensing medicine in St. Louis come from either Philadelphia or New York. Besides the ordinary preparations usually made by pharmaceutists, some chemical preparations are manufactured when convenient by different members of our Association. The stimulus created by our organization will, we hope, turn our attention more to home manufacture. Missouri, rich, as you are aware, in mineral wealth, produces also a great many indigenous herbs, the Datura stramonium, the hyoscyamus, the belladonna, other herbs of the order *Solanaceæ*, besides numerous medicinal plants which grow wild on the hills and in the valleys of Missouri, as well as on the prairies of our sister state, Illinois. Extracts made from the Datura stramonium, the hyoscyamus or belladonna, grown in Missouri, are as good and efficacious as any extracts made in the East; and compare favorably, with the extracts of these plants imported from either England or France. A fair and impartial trial of the extracts made from Missouri plants will prove, we believe, the superiority of this article of home manufacture, and that their therapeutic value is as high as that of extracts made from plants grown in other States.

There are in Missouri a good many physicians practising medicine in the country, where there are no pharmaceutists; these physicians dispense their own medicines, some of them

Sponges, 44 cases.
Syrup pagliono, 1 case.
Stipites dulcamaræ, 1 cask, 2 bales.
Storax calamita, 4 packages.
Sulphur, crude, 451 casks, 45,397 lbs.
" Flowers, 300 bales, 64 cases.
Tapioca, 38 barrels.
Tartarus solubilis, (French) 1 case.
Terra de Sienna, 12 casks.
Tincture, Wilson's Gout, 1 doz.
Tonca Beans, 11 cases.
Turpentine, Venice, 15 stands.
Verdigris, 1 case.
Vermillion, 21 cases.
Victoria Bitters, 1 case.
Water, Chlorine, 30 cases.
Water of Cherry Laurel, 7 cases.
" Mineral, not specified, 37 cases 29 baskets.
" Orange flower, 96 cases,
" Rose, 2 cases.
" Seltzer, 260 baskets.
" Vichy, 24 cases.
Wine of Colchicum, 2 cases.
" " Seed 20 lbs., Root 20 lbs.
Worm powder, 1 case.
Zinc acetate, 20 lbs.
" Biborate, 10 casks.
" Metallic, pure, 10 lbs.
" Sulphate, depur., 6 casks.
" Valerianate, 3 lbs.

FREDERICK STEARNS, Chairman,
EUGENE DUPUY,
EDWARD PARRISH,
R. H. STABLER,
On behalf of the Committee.

Appendix to the Report of the Committee on the Progress of Pharmacy.

The Committee appointed by the St. Louis Pharmaceutical Association to make a report to the American Pharmaceutical Association "on the progress of Pharmacy, and its present standing in St. Louis," beg respectfully to submit the following:

The St. Louis Pharmaceutical Association is young as yet, having not been organized a full year, but since its commencement has progressed rapidly and been a medium of diffusing general benefit, as well as mutual good feeling among the members. There are in St. Louis about fifty pharmaceutists, of whom twenty-four are members of our Association, which extends the hand of fellowship to all true apothecaries, and we have the cheering hope of seeing all real lovers of our profession in membership with our Association.

The profession of the pharmaceutist has been for many years much neglected in St. Louis. From different reasons which would be useless now to enumerate, more or less indifference was

Oilbanum, 84 cases.
Opium, 491 cases.
Potassa, chlorate, 25 cases, 52 casks, 200 kegs.
" Citrate, 1 cask.
" Bi-carbonate, 1 keg.
" Prussiate red, 6 casks.
" " yellow, 16 casks.
Potassium, 32 oz.
" Iodide, 342 cases, 200 lbs.
Pastilles, 4 doz.
" fumigat, black 35 lbs. and red, 1 cask.
Patent medicines, French, 5 cases.
Pills not specified, 1 case, Redling's 1 case.
" Blanchard's, 6 cases, Morrison's, 2 cases.
Pink Saucers, 1 cask.
Pepsine, Hogg's, 2 cases.
Perfumery, 1 case.
Phosphorus, 334 cases.
Quicksilver, 5 jars.
Quinine, 3000 oz., 35 cases.
Quinine and Iron Citrate, 75 oz.
Resin Guaiac., 1 cask.
" Jalap, 1 case.
Revalenta arabica, Du Barry's, 1 case.
Radix Aconiti, 3 bales.
" Alkannæ, 9 bales.
" Althææ, 34 bales, 7 casks.
" Angelicæ, 11 bales, 4 casks, 200 lbs.
" Arnicæ, 1 bale.
" Bardanæ, 1 cask.
" Belladonnæ, ½ cask.
" Caincæ, 2 bales.
" Calami, 19 bales, 9 casks, 165 lbs.
" Carlinæ, 1 bale.
" Colombo, 93 bales.
" Curcumæ, 3 " 10 cases.
" Colchici, 8 " 1 cask.
" Galangæ, 100 "
" Gentianæ, 132 bales.
" Graminis, 1 "
" Hellebori albi, 1 bale.
" " nigri, 2 "
" Inulæ, 1 bale.
" Ipecacuanhæ, 305 bales.
" Iridis florent: 13 casks.
" Jalapæ, 37 bales.
" Levistici, 1 "
" Liquiritiæ, 3913 bales.
" Pimpinellæ, 1 "
" Polypodii, 1 cask.
" Rhei, 2,514 cases.
" Sarsaparillæ, 3,809 bales.
" Salep, 1 bale, 2 casks.
Radix Scillæ, 60 bales, 27 casks.
" Taraxaci, 5 " 2 "
" Tormentillæ, 1 cask.
" Valerianæ, (without threads, 4 bales,) 14 casks, 16 bales, 336 lbs.
" Zingiberis, 164 casks, 48 bales, 5 cases.
Rochelle Salt, 20 kegs.
Roob Sambuci, 1 cask.
Rose Pink, 2 casks.
Rotten Stone, 2 casks.
Sago, Flour, 220 bags, 233 cases.
Safflower, 4 bales.
Saffron, 10 lbs., 9 cases.
Salts of Tin, 3 casks.
Sandarac, 7 casks.
Scammony, 13 cases.
Seidlitz Powders, 2 cases.
Salicin, 1 case.
Santonin, 4 cases.
Semen Anethi, ½ cask.
" Anisi, 270 bales, 55 casks, 27 cases.
" Anisi stellati, 286 cases.
" Brassicæ Nap. (Rape,) 210 lbs.
" Cannabis, 191 bales.
" Cardamomi, 30 bales, 299 cases.
" Canariense, 57 "
" Carvi, 215 bales, 30 casks.
" Colchici, 4 " 13 "
" Coriandri, 109 bales, 33 casks, 3 cases.
" Cumini, 25 bales.
" Cynæ, 82 "
" Fœniculi, 98 bales, 21 casks, 4 cases.
" Fœni græci, 7 casks.
" Lobeliæ, 112 lbs.,
" Papaveris, 25 bales, 4 cases.
" Psyllii, 1 bale.
" Sinapis, 21 bales, 45 cases, 10 casks.
" Trifolii albi, (white clover seed) 5 bags.
" Nigellæ, ½ cask.
Soap, skin, 1 case, Cocoanut oil, 1 case.
" Castile, 2,172 cases.
Soda Ash, 96 casks.
" Strong, 20 casks.
" Carbonate (sal soda) 17,532 casks.
" Bicarbonate, 75,707 kegs, 799 casks.
" Hypophosphite, 1 oz.
" Hyposulphite, 1 keg, 20 casks.
" Nitrate, 1500 bales.
" Silicate, 6 casks.
" Sulphate 5 "

Iron citrate, 10 lbs.
" sulphate 1 case.
Isinglass, 1 cask.
Issue plasters, 5 gross.
Japan Wax, 17 cases.
Jalapine, 1 oz.
Juice, Buckthorn, 1 cask.
Fruit, (Fruchtsaft,) 41 casks.
Spir. Raspberry, 1 case.
Kalydor, 1 case.
Leaves, Bay. (Fol. Lauri.) 16 bales.
" Buchu, 34 "
" Orange, 5 "
" Rosemary, 10 "
" Senna, 223 "
" Uva ursi, 8 "
Lead Pyrolignate, 1 cask.
" White, 13 cases.
Leeches, 3 cases.
Lime, carbonate, precip. 2 cases 1 cask.
" prepared, 1 cask.
chloride, 10 casks.
hypophosphite, 1 oz.
Vienna, 1 case.
Lint, 2 cases 1 cask.
Liquor Opii sedativ., 1 case.
Sodæ chlor. Labarr., 17 cases.
Litharge, 5 casks.
Lotion, Gowland's, 2 cases.
Lycopodium, 3 cases.
Mace, 8 casks.
Magnesia calcined, (*marked Magnesia and Calcined Magn.*) 507 cases, 230 packages, 8 casks, 30 lbs.
Magnesia calcined, Henry's, 130 cases.
" carbonate, 467 cases.
" fluid, Murray's, 15 cases, 3 casks.
" sulphate, 455 casks.
Manganese, black oxide, 4 casks.
Mastic, 4 casks.
Manna, 38 cases.
Morphia acetate, 24 oz.
muriate, 10 oz.
valerianate, 10 oz.
sulphate, 3 cases.
Musk, Cabardine, Tonquin, &c. 73 cases, 13 caddies, 59 oz.
Mustard, 7 cases, 30 kegs.
Myrrh, 2 cases, 1 bale.
Myrtle Pomade, 1 case.
Naphtha crude, 91 casks.
mineral, 50 casks.
wood, 1 case.
Nutmegs, 44 cases.
Oils essential, not specified, 3 cases.
" Almonds, expressed, 13 cases 2 casks.
Oil Almonds, essential, 25 cases.
" Angelica, 1 case 2 bottles, 5 lbs.
" Anthemis, 3 lbs.
" Anise, (from Pimpin. Anisum,) 2 cases.
" " (from Illicium Anisatum,) 99 cases.
" " 160 cases, 2 bottles.
" Bengal, 1 case.
" Bergamot, 302 cases.
" British, 100 cases, 25 jars.
" Cade, 9 lbs.
" Calamus, 1 case, 3 lbs.
" Caraway, 25 cases.
" Cajeput, 5 cases, 3 casks.
" Cassia, 29 cases.
" Cardamom, 3 cases, 3 lb.
" Castor, 847 cases, 92 casks, 150 Demijohns.
" Citronella, 16 cases, 96 bottles.
" Cloves, 4 cases.
" Cod Liver Oil, 60 cases, 160 casks, 5 tons.
" Coriander, 6 lbs.
" Croton, 19 cases, 24 bottles, 793 oz.
" Cumin, 1 case.
" Curaçoa, 6½ lb.
" Fennel, 1 lb. 3 cases.
" Geranium, 11 cases, 73 oz.
" Haarlem, 2 cases.
" Ginger, 800 oz.
" Juniper, 3 cases, 6 lbs.
" Lavender, 23 cases, 5 lbs.
" Laurel expressed, 1 cask.
" Lemon, 260 cases.
" Lemongrass, 3 cases, 408 oz.
" Macassar, 5 cases, 18 doz.
" Marasquino, 6½ lbs.
" Nutmegs, 1 case.
" Neroly, 11 cases.
" Orange, 5 cases.
" Peppermint, 2 lbs.
" Perfumed, 34 cases.
" Petroleum, (Ol. Petræcitrinum,) 1 case.
" Poppy, 9 casks.
" Rapeseed, 9 casks.
" Rhodium, 2 cases, 12 lbs.
" Rose, 8 cases, 37½ lbs., 6 cans.
" Rosemary, 13 cases.
" Rue, 1 case.
" Savin, 3 cases.
" Succinum crude, 2 cases, rectified 1 case.
" Tea, 10 cases.
" Thyme, red 31 cases, rectified 11 do.
" Valerian, 1 case 2 bottles.
" Verbena, 36 bottles.

Cream of Tartar, 1230 casks.
Creosote, 200 lbs. 28 cases, 8 boxes.
Cubebs, 269 bales.
Cuttle Fish bone, 23 cases.
Disinfecting powder, 42 bags.
Damar resin, 523 cases.
Dragees, 15 cases.
Dragon's blood, 9 cases.
Drugs, not specified, 11 cases 4 casks.
Elaterium, 50 oz.
Emery, corn and flour, 95 casks.
Emplast. adhesiv., 1500 yards.
Embrocation, 1 case.
Ergot, 3 cases, 7 casks.
Essence of Cognac, 5 cases, 10 lbs.
" Jessamine and Melissa 1 case.
" Maravillosa, 2 cases.
" Mirbane, 15 cases.
" Pimento, 14 cases.
" Rum, colorless and brown, 118 cases, 60 lbs.
" Whiskey, 1 case.
Extracts, not specified, 4 cases.
" (Allen's 1, Herring's 2, Squire's 1,) 4 cases.
" of Aconite, 30 lbs.
" " Belladonna, 130 lbs.
" " Cannabis indicæ, 382 oz. 20 cases.
" " Conium maculatum, 80 lbs.
" " Ferri pomatum, 1 case.
" " Chelidonium, 15 lbs.
" " Colchicum, acetic, 5 lbs.
" " Gratiola, 1 lb.
" " Hyoscyamus, 45 lbs.
" " Lactuca virosa, 2 lbs.
" " Liquorice, 15,023 cases, 40 casks.
" " Nicotiana, 2 lbs.
" " Safflower, 8 cases.
" " Sarsaparilla, 2 cases.
" " " comp. 1 case.
" " Stramonium Seed, 10 lbs.
" " Taraxacum, 90 lbs.
Fig Blue, 1 cask.
Fluor spar, 1 cask.
Flowers, Absynth, 1 case.
" Arnica, 102 bales, 2 casks.
" Althæa, 1 bale.
" Chamomile, 101 casks.
" " German, 24 casks.
" Lavender, 30 bales.
" Malva arborea, 47 bales, 16 casks.
" " vulgaris, 2 cases, ½ cask.
" Millefolium, 1 bale.
Flowers, Rose, 6 bales, 1 cask.
" Red Poppy, 4 bales, 2½ casks.
" Sambucus, 4 bales, 9 casks.
" Tilia, 12 bales, 2 casks, 20 lbs.
" Verbascum, 1 case, 2 casks.
Fuller's Earth, 2 casks.
Galls, 222 bales.
Gambir, 3231 bales.
Gamboge, 53 cases.
Gelatine, 6 kegs, 7 casks.
Glue, 11 cases.
Glandes Quercus escort., 2 casks.
" " tostæ pulv., 3 casks.
Glycerine, 2 casks, 68 cases, 800 lbs.
Guinea Grains, 30 bales.
Gum Arabic, 3221 bales, 591 cases, 1280 casks.
" Kourie, 5414 bales, 51 casks.
" Tragacanth, 3 bales, 32 cases.
Herba Absynthi, 18½ bales.
" Belladonnæ, 25 bales, 5⅛ casks.
" Capilli veneris, 2 bales.
" Cardui benedicti, 2 bales.
" Centaur. minor. 2 bales
" Conii maculati, 4 cases, 9 lbs.
" Digitalis, (and pulv. 6 lbs.) 21 bales, 1 cask, 20 lbs.
" Fumariæ, 1 bale,
" Galegæ, 1 cask.
" Hyoscyami, 13 bales.
" Hyssopi, 1 bale, 2½ casks.
" Jaceæ, (Viola tricol.) 2½ casks.
" Majoranæ, 1 cask, 2 bales.
" Malvæ arboreæ, 1 bale.
" " vulgaris, 3½ casks.
" Marrubii, 1 bale, 152 lbs.
" Matricariæ, 5 lbs.
" Menthæ piper., 1 bale, 2 casks.
" Millefolii, 3 bales.
" Pulsatillæ, 1 bale.
" Sabinæ, (and pulv. 6 lbs.) 10 bales, 5 lbs.
" Salviæ, 11 bales, 1¼ casks.
" Saponariæ, ⅛ cask.
" Scordii, ¼ cask.
" Taraxaci, ¼ cask.
" Thujæ, ⅛ cask, 25 lbs.
" Verbenæ, 1 bale, 12 lbs.
" Orchella Weed, (Rocella tinct,) 1 bale.
Iceland Moss, 6 bales.
Indian Hemp, 13 cases.
India Red, 1 cask.
Ink, Alizarin, 2 cases.
Insect Powder, 14 bales, 3 casks.
Iodine, (crude and resublimed,) 240 lbs., 3 casks, 18 kegs, 32 cases.
Iron, carbonate, precip. 284 lbs.

Quantities of the various Drugs and Medicines that passed the Custom House at New York, during the year ending August 20th, 1858.

Acid, acetic, 2 casks, 14 cases, 20 carboys, 1640 lbs.
" " glacial, 10 lbs.
" benzoic, 2¼ lbs. 2 cases.
" boracic, crude, 690 bags.
" butyric, 2½ lbs.
" citric, 55 casks, 6 cases, 67 kegs.
" gallic, 12¼ lbs.
" lactic, 28 oz.
" oxalic, 203 casks.
" picric, 10 lbs.
" phosphoric. glac., 100 lbs. 1 case, 3 casks.
" tartaric, 11,200 lbs. 116 casks.
" valerianic, 16 oz.
Æther, 10 lbs.
" butyric, 3 cases.
" œnanthic, 3 cases 7 lbs.
Alkali, 140 casks.
" white 40 casks.
Aloes, 217 cases, 126 kegs.
" Cape, 21 cases.
" Socotrine, 6 cases, 37 kegs.
Alum, Roman, 2 casks.
Ambergris, 4 oz.
Ammonia, carbonate, 507 casks.
" hydriodate, 1 case.
" muriate, 25 casks.
" sulphate, 114 casks.
" valerianate cryst, 20 oz.
Annato, 54 cases.
Antimony, 6 kegs, 4 cases.
Argols, 50 casks.
Arrow Root, 1352 tins, 73 boxes, 645 cases, 116 kegs, 234 half bbls. 21 bbls. 12 casks.
Arsenic, white, 935 casks.
" red crystall. 1 keg.
" " powdered 3 kegs.
Argentophile, 2 cases.
Assafœtida, 105 cases.
Atropia, 6½ oz.
" Sulphate, 1⅛ oz.
" Valerianate, ⅛ oz.
Balsam Copaiva, 30 tins, 89 jars, 272 demijohns, 271 cases, 536 bbls, 898 casks.
" Tolu, 70 tins, 9 cases.
Bark, Peruvian, 19,431 bales.
" Orange, 122 bales.
" Greenheart, 100 casks.
" Oak, 1 bale.
" Pomegranate, 1 bale.
" Rhamnus frangul. 1 bale.
Baryta, Acetate, 1 lb.
" Carbonate, 8 casks.
" Nitrate, 25 lb.
" Sulphate, 1 case.
Barley, Patent, 4 cases.
Benzoin, 12 cases.
Benzole, 3 casks.
Berries, Buckthorn, 18 bales.
" Elder, 4 casks.
" Huckle, 3 casks.
" Juniper, 2 cases, 100 bales.
" Sumach, 1060 bales.
" Yellow, 27 bales.
Bismuth, 1 cask.
Bitumen, Liquid, 21 casks.
Bleaching Powder, 156 lbs. 107 casks.
Blue Mass, 125 lbs. 4 cases, 6 casks.
Boletus cervinus, 1 cask.
" Laricis, (Agaric) 1 cask.
Bolus, Armen. 1 cask.
Bromine, 12 lbs. 5 cases.
Borax, 20 boxes, 10 bbls.
Cacao Butter, 4 cases.
Cachous, 20 doz. 3 cases.
Calomel, 100 lbs. 11 cases, 6 casks.
Calcium, Chloride, 2 cases.
Cadmium, 20 lbs. 1 case.
" Iodide, 5 lbs. 1 case.
Camphor, Crude, 2054 cases.
" 3032 boxes.
Cantharides, 48 casks, 20 cases.
Cantharidal Tissue, 3 cases.
Capsules, 3 cases 2 gross.
" Mathey's, 1 case.
" Poppy, 45 casks, 11 bales.
Carobes, 6 casks.
Cassia, lignea vera, 4300 mats, 671 cases.
" buds, 204 cases.
Castoreum, 3 kegs.
Cement, Diamond, 1 case.
Chalk, 1 cask.
Chemical Preparations, 8 cases.
Cherries, Dried, 1 bale.
Chloroform, 4 cases, 50 lbs.
Cobalt, 3360 lbs.
Cochineal, 58 bales.
Cold cream, Paty's, 1 case.
Colocynth, 47 cases, 4 bales.
Copal, 160 cases, 90 casks.
Cornu Cervi, 10 casks.
" " ustum. præpar. 8 casks.
Copper, Sulphate, 12 casks.
Cowage, 1 case.

Potables et Economique, avec leurs principales applications à l'hygiene et l'industrie. Fabrication des eaux minerales artificielles. 8vo. Paris, 1858. Par Ossian Henry.

Traité d'Analyse Chimique par la Méthode des Volumes. Comprenant d'analyse des gaz et des metaux, la chlorometrie, la sulphydrometrie, l'acidimetrie, saccharometrie. 8vo. Paris, 1858. Par A. B. Poggiale.

Traité Pratique de la Culture et de l'Alcoolisation de la Betterave, 2e édition revue et augmentée. 18mo. Paris, 1858. Par N. Basset.

Traité Complet de la Distillation des Substances qui peuvent fournir de l'Alcool: vins, groims, fruits, tiges, racines, tubercules, etc. 1 vol., in 8vo.; avec 14 planches et 33 figures dans la texte. Paris, 1858. Payen.

German.

Anleitung zur quantitativen Chemischen Analyse. 4 Aufl. Mit Holzschn. Dr. C. B. Fresenius. (Braunschweig), 1858.

Prof. Dr. J. Gottlieb. Lehrbuch der pharmac. Chemie mit Berücksichtigung der oesterreich. preuss. und sachs: Pharmacopoeen. Mit vielen Holzschnitten. Berlin.

Handwoerterbuch der reinen und angewandten Chemie. Begründet von Liebig, Poggendorff und Woehler. Redigirt von Prof. Dr. Fehling. Braunschweig.

Dr. E. Reich. Medicinische Chemie. In 2 Baenden. Erlangen.

Dr. W. Reil. Materia medica der reinen chemischen Pflanzenstoffe. Berlin.

Dr. E. A. E. Riegel. Lehrbuch der pharmaceutischen Chemie. 2. Ausgabe. Stuttgart.

Dr. F. L. Sonnenschein. Anleitung zur chemischen Analyse. 3. Auflage. Berlin.

Dr. A. Günther. Handbuch der medicinischen Zoologie. Stuttgart.

Prof. Dr. Rochleder. Anleitung zur Analyse von Pflanzen und Pflanzentheilen. Würzburg.

The Year Book of Facts in Science and Art; exhibiting the most important discoveries and improvements of the past year in Mechanics and the Useful Arts, Natural Philosophy, Electricity, Chemistry, Zoology and Botany, Geology and Mineralogy, Meteorology and Astronomy. By John Timbs. London, 1858.

Hand-book of Chemistry: Theoretical, Practical and Technical. Abel & Bloxam. 2d edition. 8vo. London, 1858.

Electro-Chemistry, with positive results. 8vo. London, 1858. By C. Chalmers.

An Introduction to Practical Chemistry, including Analysis. By J. F. Bowman. Third edition. 12mo. London, 1858.

The Chemical Atlas; or tables showing at a glance the operation of qualitative analysis, with practical observations and copious indices of tests and reagents. 12mo. and atlas folio. By A. Normandy. London, 1857.

Gmelin's Hand-book of Chemistry. 11th volume. 5th vol. of the organic series has been received by the American Local Secretaries of the Cavendish Society.

French.

Traité de Chimie Technique, appliquée aux arts et à l'industrie, à la pharmacie, et à l'agriculture. Tom. iii., 8vo. Paris, par G. Barruel.

L'Officine, (par Dorvault) un repertoire général de pharmacie pratique. 5e edition considérablement augmentée. Grand 8vo. Paris, 1858. (Broche.)

Exposition et Histoire de Principales Découvertes Scientifiques Modernes. 5e edition, 4 vol., 18mo. Paris, 1858. Par S. Figuier.

Nouvelles Manipulations Chimiques Simplifiées, ou laboratoire économique de l'étudiant, ouvrage contenant la description d'appareils simples et nouveaux suivi d'un cours de chimie pratique à l'aide de ces instruments. Nouv. edition, 8vo. Paris, 1858. Par H. Violette.

Traité Pratique d'Analyse Chimique des eaux Minerales

Medical Lexicon. A Dictionary of Medical Science, containing a concise explanation of the various subjects and terms of anatomy, physiology, pathology, hygiene, therapeutics, pharmacology, pharmacy, surgery, obstetrics, medical jurisprudence, dentistry, etc.; notices of climate and of mineral waters, formulæ for officinal, empirical, and dietetic preparations, etc., with French and other synonymes. By Robley Dunglison, M. D. New edition, revised and greatly enlarged, Nov. 1857. Philada., Blanchard & Lea.

The Dispensatory of the United States of America. By George B. Wood, M. D., and Franklin Bache, M. D. Eleventh edition, carefully revised. Philad., J. B. Lippincott & Co., 1858. Pp. 1583, octavo.

Elements of Inorganic Chemistry; including the application of the Science in the Arts. By Thomas Grahame, F. R. S., L. and E., etc. Edited by Henry Watts, B. A., F. C. S., and Robert Bridges, M. D. Second American, from the second revised and enlarged London edition. Complete in one volume, with 238 illustrations on wood. Philada., Blanchard & Lea, 1858. Pp. 852.

First Book of Chemistry and Allied Sciences, including an Outline of Agricultural Chemistry. By John A. Porter, M. A., M. D. Pp. 202. A. S. Barnes & Co.

Annual of Scientific Discovery, or Year-book of Facts in Science and Art, for 1858. Edited by David A. Wells, A. M. Gould and Lincoln, Boston.

A Manual of the Detection of Poisons by Medico-Chemical Analysis. By Prof. Otto. Translated from the German, with notes, etc. By Prof. W. Elderhorst, of Troy, N. Y. 8vo. New York, 1856. Bailliere.

The Chemistry of Wine. By G. J. Mulder. Edited by H. Bence Jones. 12mo. London, 1857.

A Hand-book of Chemical Manipulation. By C. Greville Williams. London, 1857.

The Radical Theory in Chemistry. By John Joseph Griffin. London, 1858.

sular and Independent Medical Journal," April, 1858, and under the editorship of A. B. Palmer, M. D., Moses Gunn, M. D., and Frederick Stearns. Part of this journal is devoted exclusively to pharmacy, under the editorship of the last named gentleman. This union of medicine and pharmacy in one journal is new in this country, and it is hoped will prove of value, and conduce to the best interests of all branches of medical science in the North West.

In June last, the Maryland College of Pharmacy issued the first number of the "*Journal and Transactions of the Maryland College of Pharmacy*," a quarterly, designed as the organ of the Pharmaceutical College of the city of Baltimore. Judging from the contents of the first number, it will prove a valuable accession to our literature.

The American Journal of Pharmacy and the American Druggists' Circular, still continue their issues. The last has recently changed hands, and from Mr. Henry Bridgeman has passed into those of Dr. L. V. Newton. These last named periodicals are so widely known by the Association and the profession at large, as to require no comment from your Committee.

The following books have been published during the past year, which relate in part, or wholly, to our profession, and its accessory sciences and arts.

The Hand-book of Practical Receipts of Every-day Use; a manual for the chemist, druggist, medical practitioner, manufacturer, and heads of families; comprising the officinal remedies, their uses and modes of preparation, and formulæ for trade preparations, mineral waters, powders, beverages, dietetic articles, perfumery, cosmetics, etc.; a glossary of the terms used in medicine and chemistry, including old names, contractions, vulgar and scientific demonstrations, with a copious index to all the preparations. By Thomas F. Bromston. First Amer. from 2d London Edition. Philada., Lindsay & Blackiston, 1857, pp. 307.

Druggists' Receipt Book. By Henry Beasley. Messrs. Lindsay & Blackiston have issued a third edition (Oct., 1857,) of the above, with numerous additions. 12mo., pp. 495.

It further enacts, that no apothecary shall sell or give away any substance, termed a *rank poison*, without a certificate from a Physician, Justice of the Peace, or Clergyman.

It requires also, that all substances denominated poisons, as expressed in the bill, shall be kept in a private or safe place, in *yellow* bottles, with legible labels upon each, in order to prevent mistake. It provides also for visits of inspectors, from the governors of the College, to the dispenser's shop.

Your Committee believe that this bill is now under discussion, with the view of passing it at the next session of Parliament.

We believe this bill met with the strongest opposition from the druggists of Canada.

A member of our Committee, who has been travelling in Europe during the past summer, and who from that cause has been unable to join in the recent labors of the Committee, writes us in regard to the London Pharmaceutical Society and its several branches, that they are maintaining an active and useful supervision of the interests of our profession in Great Britain.

A cumbersome and yet most inefficient law for the regulating of the sale of poisons, in England, was introduced into Parliament, during the last session, and by the vigorous opposition of the Council and members of the Pharmaceutical Society was rendered so unpopular as to be withdrawn by government before it came to a vote in the House of Commons.

This triumph of the Society has added to its influence with the community and profession, and is likely to lead to more caution on the part of government in legislating upon this important subject, and especially to the extent of interfering with the vested rights of the Druggists and Chemists.

We also learn that the Swedish government have during the current year sent a commission through France and England to investigate the subjects of pharmaceutical education and organization, with a view to the creation of this branch of professional knowledge into a separate school in that flourishing kingdom.

LITERATURE.

To our periodical pharmaceutical literature we have had during the past year an accession in the establishment of a medical and pharmaceutical journal at Detroit, entitled "The Penin-

been passed in the United States, during the past year, designed to restrain the sale of poisons; the subject seems to be extremely distasteful to the American dispenser, to be dictated to whom and in what manner he shall sell poisons; and all usually consider that the value of the reputation acquired by the educated druggist, dictates to him the policy of avoiding by every means and care possible the occurrence of accidents resulting from the sale of poisonous substances. It seems consistent that if an educational society for druggists was established in our country, that then legal enactments, which would compel those dealing in poisons to first become mentally qualified, would be all the legal interference required in the matter.

A Committee appointed by the Pharmaceutical Society of Great Britain, to report upon the "Sale of Poisons Bill," express the opinion *that the proper education of the venders of poisons will alone insure the desired object of public safety.*"

It is, perhaps, proper, in this connection, to notice the following:

A bill, designed to regulate the sale of poisons and the studies of apothecaries, has been, and is now, under consideration of the College of Physicians and Surgeons of Lower Canada.

This bill requires that no person shall act as an apothecary under twenty-one years of age, and without having served as an apprentice under a licensed apothecary at least three years, and obtained a diploma after examination by the governors of the College of Physicians and Surgeons. It also enacts that all practising as apothecaries shall give evidence of a sound elementary education, good moral character, and of having attended a course of Medical Jurisprudence of at least three months, two courses each of Materia Medica and Chemistry, of at least six months duration, at some recognised medical school.

It enacts fines as penalties of non-fulfilment of the provision of the act, and gives the power of regulating the fees for licensing, to the governors of the College of Physicians and Surgeons.

It enacts fines for the uttering of adulterated or spurious drugs, defines the limits of the business of the apothecary to be dispensing, and forbidding him to prescribe; but allows of the selling of patented or secret nostrums.

Presidents, Corresponding Secretary, Treasurer, and five Trustees elected. Your Committee have received no report of the transactions of this new organization up to date of writing this report, but presume from the minutes published in the Pacific Medical Journal that it is in a flourishing condition, and likely to be of much benefit to the profession of the State.

LEGISLATION ON THE SUBJECT OF THE SALE OF POISONS.

The subject of legislation in reference to the sale of poisons is still agitating the fraternity in England, and through all the discussions there seems to be weighty and successful arguments against the passing of any strictly prohibitory law. A Mr. Joseph Ince, in a recent communication to the London Pharm. Journal, after reviewing a bill at the time before the public in relation to the subject, says, "I believe the sole remedy exists in the establishment of a legally constituted, authoritative, educating Society. Let it once be known that no man who has not complied with its regulations, and received its diploma, shall be permitted to call himself Chemist, and practice pharmacy; that no man, unless duly qualified by the ordeal of its examination, shall be allowed to exercise a calling which demands the utmost skill and most accurate knowledge; that no man unauthorized by its sanction shall complacently vend the deadliest substances, in the deadliest ignorance; but that the sale of such dangerous remedies shall be restricted to legally, as well as mentally, qualified persons, and then the public may breathe once more, and the Council of the Society cease to discuss important subjects as amateur philosophers. A class of men will be instantly created, who, both from their position and their education, will feel the full responsibillity of their onerous duties, and to whom the practical working out of these difficult questions may safely be committed. The huckster, oil man, and fancy chemist will be driven to resume their own legitimate occupation, and the true Pharmaceutist will be able to get a living, even without the sale of brushes. Let Government leave the trade details of the shop untouched, and select the men: the one act is police interference; the other—legislation."

Your Committee are not aware of any legislative act having

vested, and also pharmaceutical meetings of the College, held on the same day, which have been quite punctually attended and much information and pleasure derived by those who have been able to attend them. The library has been somewhat increased by the addition of some valuable works, and the list of members has increased in a steady and healthy manner.

The Cincinnati College of Pharmacy, which for a few years back has not exhibited much activity, is now, through the influence of some of its members, taking measures to institute an annual course of lectures for Students of Pharmacy, in connection with the lectures of the Ohio Medical College.

Parrish's School of Practical Pharmacy, Philadelphia, continues its semi-annual sessions. This school is intended more particularly for the benefit of the medical student seeking instruction in the practical branches of our art, but is also attended by some strictly pharmaceutical students.

PHARMACEUTICAL ASSOCIATIONS.

In addition to the Pharmaceutical organizations of Philadelphia, Baltimore, New York, (all educating associations,) Boston, Cincinnati, and Richmond, we have to chronicle the re-organization of the St. Louis Pharmaceutical Association, December 9th, 1857, at a subsequent meeting of which the officers for 1858 were elected, consisting of a President, two Vice Presidents, Recording Secretary, Corresponding Secretary, Treasurer, and three standing committees of five each—one executive, the other upon the progress of pharmacy and unofficial formulæ. The report of the Committee on the Progress of Pharmacy of this Association to the American Pharmaceutical Association, is appended to this report marked A. The St. Louis Society numbers twenty-four members, and from the Code of Ethics, Constitution, and By-Laws adopted, will occupy, in the opinion of your Committee, a prominent and active position among the Societies of the Union.

The pharmaceutists of San Francisco, Cal., organized themselves into an Association, under the title of "The San Francisco Pharmaceutical Association," on February 11th, of the present year. A constitution was adopted, and a President, two Vice

In each group there are excitants and paralyzers. No poison is known which acts exclusively on the muscles, although veratria may be almost included in such a class. We possess no blood poison—that is to say, no substance which so modifies the mutual physiological relations of the normal elements of the blood as to render the fluid injurious. Poisons act on organs, both through the medium of the blood, and when applied locally, and the rapid action of violent poisons is naturally explained by the rapidity of the circulation.—(Virg. Med. Jour. July, 1858; from Archiv. für Pathol. Anat. und Physiol.)

EDUCATION.

The Philadelphia College of Pharmacy held its thirty seventh session, between the months of September, 1857, and March 1858, graduating during the latter month *thirty-one* students. The lectures in this institution consist of three courses, on Chemistry by Robert Bridges, M. D., on Pharmacy by William Procter, Jr., and on Materia Medica by Robt. P. Thomas, M. D.

The New York College of Pharmacy held its 28th session between the months of October, 1857, and March, 1858, graduating two young gentlemen in the latter month. The Chair of Chemistry is held by Prof. R. O. Doremus, M. D., and of Pharmacy and Materia Medica by Prof. Geo. Thurber.

The Maryland College of Pharmacy was incorporated in 1840, from which time until 1847 it maintained a vigorous existence, but thereafter languished until 1856, when through the energy of a number of pharmaceutists it was thoroughly reorganized. It now consists of 48 active, 6 contributing, and 8 honorary members. The three professorships, of Chemistry, Pharmacy, and Materia Medica, are filled by Lewis H. Steiner, M. D., Prof. of Chemistry, Francis Donaldson, M. D., Prof. of Materia Medica, and Israel J. Grahame, Prof. of Pharmacy. At the close of the session of 1857–8, in March, the degree of Graduate in Pharmacy was conferred upon three students.

The Massachusetts College of Pharmacy have issued no printed Proceedings the past year, and not much can be reported upon it at this time. There have been regular monthly meetings of the Board of Trustees, in whom the affairs of the College are in-

drachms of the dried or one ounce of the recent root. That it is not a simple irritant but a narcotico-irritant; and he also states, that he believes that the substance named bryonine is not the proximate element it is considered.—(Lond. Pharm. Journ., May, 1858.)

Poisoning by Digitalin.—Dr. Heer (Journal de Pharmacie et de Chimie) records three cases of poisoning by digitalin, none of them fatal, and gives the treatment employed.—(Am. Journ. Pharm., May, 1858.)

Delicate test for the garlic smell of Arsenic.—Dr. Vogel states that the garlic smell of arsenic may be perceived remarkably when even the smallest quantity of arsenic is present, by rubbing intimately together very fine charcoal powder, a very diluted spiritous solution of shellac and the arsenious acid; it is then exposed to the action of the blow-pipe.—(Buchner's Repert.)

Treatment of Poisoning by Opium.—Dr. N. L. Folsom reports in the N. H. Jour. of Medicine, a case of poisoning by opium, of a child six years old, treated successfully by local application of scalding water to the feet.

Treatment of Poisoning by Strychnia.—Bouchardat's method is reported in the St. Louis Med. Journal, consisting essentially, of—1st, emptying promptly the stomach by prompt emesis; 2d, administration of iodurated water in large doses, (iodine 6 gr., iod. potassium 4 scruples, water 1 quart,) and in excess; 3d, to oppose the tetanic symptoms by artificial respiration, inspiration of oxygen, galvanism after the vomiting is under control, and opium freely, to oppose tetanic rigidity.

Physiological Action of Poisons.—Prof. Kölliker, in investigating the physiological action of certain poisons, such as curare, conia, strychnia, opium, nicotine, veratria, etc., states, after detailing the peculiar action of them upon the nervous and muscular systems, that "in general, poisons manifest special affinities for certain organs. There are as yet only nervous poisons and muscular poisons. The former may be divided into three groups; (1) those which act on the grey matter, (veratria, strychnia, opium;) (2,) those which affect the nervi-tube, (curare, conia;) (3,) those which act on both elements, (nicotine, hydrocyanic acid, ether.)

with nitrate of strychnia, and fails altogether with an excess of tartrate of antimony. These results refute the statements of Von Sicherer to the contrary.—(Am. Journ. Pharm., Jan., 1858, from Lieb. Ann.)

Influence of Alkalies upon Narcotics.—Dr. A. B. Garrod (Lond. Pharm. Journ., March, 1858) states that he has demonstrated beyond doubt the fact that the active properties of henbane, belladonna and the other narcotic plants, is destroyed by liquor potassæ and solutions of the other caustic alkalies. The deductions drawn from his experiments are:

1. That neither liquor potassæ or any caustic fixed alkali should be prescribed with tincture or extract of henbane, as the virtues of the latter drug are thereby completely neutralized.

2. That when it is desirable to administer an alkaline remedy with henbane, either a carbonate or bi-carbonate should be selected, which would probably be equally efficacious upon the stomach if such influence be required, and certainly as efficient in altering the condition of the urine, and the mucous membrane of the urinary passages.

3. That the same precaution be observed with regard to belladonna and stramonium, if at any time prescribed in conjunction with alkalies.

Poison of the Upas antiar.—Prof. Albert Köliker, by experiments with the poison of the famous *Antiaris toxicaria*, (Lesch.) upon cold blooded animals, has determined that the antiar acts principally upon the muscular fibre, and produces paralysis of it.—(Lond. Pharm. Journ., March, 1858.)

Reagents for ascertaining the presence of Ergot.—John Morland (Lond. Pharm. Journ., April, 1858) has made the reactions of various tests with ergot a study, and states that the most characteristic of them are those with the caustic alkalies, the salts of copper, and the sulphate of zinc and alumina. He employs an aqueous solution of the alcoholic ext. of ergot, the aqueous solution of the coloring matter shows the presence of nitrogen, upon calculation; another important characteristic, as few vegetable coloring matters are nitrogenous.

Toxical powers of Bryony Root.—Mr. Wm. Herapath states, that the white bryony root is fatal to human life in doses of two

Colchicin.	*Veratria.*
Odorless.	Ordorless, causes sneezing.
Soluble in water.	Insoluble in water.
Bitter taste.	Sharp, pungent taste.
No alkaline reaction.	Distinct alkaline reaction.
Violet color, with conc. NO_5	Yellow, with conc. NO_5
Yellowish brown, with conc. SO_3 HO	Blood red violet, with conc. SO_3 HO.
Yellow color, with HCl.	No change with HCl.
Changed into kermes color with tinct. iodine.	No change with tinct. iodine.

Colchicin, its effects upon the economy.—The effect of colchicin upon the economy has been made the subject of investigation by Prof. Crawcour, of New Orleans, resulting in his ascertaining that it acts similarly to other acrid substances after absorption, producing severe nausea, griping and copious evacuations of fluid stools, persistent fever and debility. When death occurs from the use of this substance, it probably proceeds from paralysis of the heart. Unlike other toxic agents the time required to produce death bears no relation to the quantity of poison administered. This substance has been shown by Oberlin not to be the active principle of colchicin, he having obtained a crystalline principle, termed *colchiceine*, which pre-exists in colchicum, and is much more active than the *colchicin*.

Bibron's Antidote to the poison of the Rattlesnake.—William A. Hammond, M. D., in a paper published in the Amer. Journ. Med. Sci., Jan., 1858, confirms the value attributed to the antidote for the poison of the rattlesnake, made known to the French Academy of Sciences by Prof. Bibron, by giving the successful results of its repeated use during an expedition to the Rocky Mountains, in which several of his party were bitten by rattlesnakes. The antidote is prepared as follows: Take of iodide of potassium 4 grains; corrosive sublimate 2 grains; bromine 5 drachms. Mix. Ten drops of this mixture diluted with a tablespoonful or two of wine or brandy constitute a dose, to be repeated if necessary.

Strychnia, its detection.—Richard Hagen, states, that the presence of tartrates, tartrate of antimony, or free tartaric acid with pure strychnia, does not effect the reaction with bichromate of potash and sulphuric acid; but that it becomes less sensitive.

Personne, (Comptes Rendus, July 20th, 1857,) to be harmless in its action upon the economy. The same author has shown that, phosphatic acid, or the mixture of phosphorous and phosphoric acids produced by the slow combustion of normal phosphorus in moist air, is also harmless; this confirms the opinions of Orfila, Rigout and others, and refutes those of Wöhler and Frerichs.

Strychnia and its Salts.—Alexander Reid, in an essay presented to the McGill College, after describing various salts of strychnia, many of them but little known; such as the hydrobromate, hydrocyanate, hydroferrocyanate, antimoniate, arsenite, hydrochlorate with platina, hydrochlorate with mercury, and hydriodate with iron, concludes from experiment that the therapeutical or toxicological action of strychnia depends upon the alkaloid alone, uninfluenced, or to a slight extent only, by any other substance with which it may be chemically united; insolubility has but little to do with the physiological action of strychnia or its compounds contrary to preconceived opinions that the more insoluble any compound is, the less likely will it be to act energetically.—(Montreal Med. Chronicle, Sept., 1857.)

Dr. Steiner, considers from all the cases upon record, that nothing is of avail but free and copious emesis in poisoning by strychnia, and says no one can neglect this point in the treatment of strychnia poisoning, without being considered highly culpable. If too much of the poison has not been absorbed, life *may* be saved by the administration of the emetic.—(Virg. Med. Journal, Oct., 1857.)

Dr. Schroeder, of Manheim, publishes in the Polytech. Journ., a case of the detection of strychnia in the vomita and urine of the patient who had taken nux vomica for suicide; he used alkali and ether for its separation, and obtained a film of mixed brucia and strychnia from the urine, proving that these alkaloids pass into that secretion.

Characteristics of Colchicin and Veratria.—The following characteristics of the two alkaloids, colchicin and veratria, are given by Gustav. Bley, as translated by Dr. Ch. J. F. Schlback, of Newark, N. J.,—(Med. and Surg. Rep., Vol., 10, pp. 10, from Medicin. Neuigkeiten.)

Med. Journal, 1858) has used oxide of zinc in doses from seven to ten grains, in nocturnal sweating of phthisis, and in acute rheumatism, with success.

Gentiana quinqueflora.—Dr. H. A. Johnson, in a report upon drugs and medicines, to the Illinois State Society, calls attention to the valuable properties of the *Gentiana quinqueflora*, Indian Quinine or Ague Weed, as an anti-periodic, stating that it is largely used in domestic practice.—(Trans. of Ill. State Med. Society, 1857.)

Asclepias tuberosa.—Dr. C. Goodbrake, in a report upon pleurisy or white root, (*Asclepias tuberosa,*) to the above Society, states, that it possesses valuable diaphoretic properties, and remarks that its action on the system resembles somewhat Dovers powders, for which it forms in many instances a very good substitute, without the objection which frequently is urged against the use of Dovers powders of causing cerebral disturbance, or checking the secretion of the kidneys. It is also particularly recommended in the diarrhœa and dysentery of children.—(Ibid.)

TOXICOLOGY.

Coffee as an Antidote.—Dr. Max Langenschwarz proposes a tincture or decoction of raw coffee as an antidote to the poisonous action of opium, belladonna, aconite, nux vomica, hellebore and the vegetable alkaloids; also for oil of tansy, conium, Rhus toxicodendron, hyoscyamus, savin, ergot, tobacco, etc. Dr. L. considers that coffee in the roasted state has no value as an antidote. The assertions of Dr. L., require confirmation by further experiment.

Sweet Oil as an Antidote for Strychnia.—Dr. Shaw, of Texas, has treated two cases of poisoning by strychnia successfully, by giving freely sweet oil.

Camphor as an Antidote for Strychnia.—Prof. Rochester, reports having treated two cases of poisoning by strychnia, by administering large doses of camphor, and applying mustard externally.

Toxical Action of Phosphorous Acid.—Phosphorous acid, this substance hitherto considered poisonous, has been proved by J.

the fruit of *Maesa picta*, called *saoria*, as a valuable vermifuge, superior to kousso as a *tæniafuge*. The plant is a native of Abyssinia.—(Brit. and Foreign Medico-Chir. Review, July, 1858.)

New Caustic.—Dr. Brun, in the Gazette Médicale of Lyons, has prepared a new caustic. He states, most of the modifications of caustic agents have hitherto had for their object the augmentation of their caustic powers; he proposes an opposite result in the formation of a double nitrate of silver and soda. This he believes possesses the modifying properties of lunar caustic without its destructive effects. The double salt is prepared by mixing in the proper proportions solution of nitrate of silver and nitrate of soda, evaporating, and fusing the mass and forming it into cylindrical moulds. The action is unattended by the severe pains following the use of lunar caustic alone.

Yellow Jessamin.—Dr. John Douglass, (Charleston Med. Journ. and Review, July, 1857) records the successful treatment of gonorrhœa by tincture of yellow jessamin (*Gelseminum sempervirens*). It has, he states, been long used in South Carolina, with success in rheumatism.

Trillium pendulum.—A. P. Dutche, M. D., (Cin. Lancet and Observer, July, 1858,) recommends the root of the *Trillium pendulum*, called commonly, *Beth root*, in combination with *Scutellaria laterifolia*, in infusion, in the treatment of menorrhagia.

Malva moschatam in idiopathic constipation.—M. Duvignac (Moniteur des Hôpitaux) states, that this substance employed as a laxative by the Greeks and Romans, forms the best substitute for castor oil, being as mild and as certain in its operation, without possessing its nauseous qualities. He administers it in form of bon-bon.—(Medical Chronicle, Montreal, June, 1858.)

Benzole for Itch.—M. Bonnet, of Epinal, has announced to the Academy of Sciences of Paris, that Benzin (Benzole) is a specific for itch; a cure may be affected in a few minutes by a local application of it, after which the patient may take a warm bath.—(Montreal Med. Chronicle, July, 1858.)

Oxide of Zinc in profuse sweating.—Dr. Jackson (Boston

vitality but decompose and dissolve the tissue, whether dead or living. These two classes are divisible into sub-classes, on account of a peculiar mode of action in each individual case. —(Am. Drug. Circular, Jan. 1858.)

Glycerine in Croup.—E. R. Mayer, M. D. in a communication to the Am. Jour Med. Science, April, 1858, recommends the local application of glycerine in treatment of membranous croup. Its peculiar softening, adhering and penetrating power when applied to a mucous surface, seeming to render it especially useful in softening down the excretion found in the larynx during the progress of this disease.

Picric Acid.—MM. Calvert and Moffert detail some experiments with picric acid and its salts of ammonia, iron, nickel and zinc. These experiments determine the value of these salts, and that they are closely allied to quinia and its salts in therapeutical action. The picrate of iron is useful in treatment of many forms of cephalalgia, while that of ammonia is better adapted to the treatment of intermittents and hypochondria. Associated with gallic acid and opium, the latter salt has succeeded well in the treatment of a great number of cases of the most obstinate diarrhœa. A remarkable feature of the use of this remedy, is that it induces a yellow hue of the skin, much resembling that of jaundice; the effect is produced in from two to six hours, and it disappears in about the same time when the remedy is discontinued. The dose of the salts is about one-sixth of a grain each hour.—(Pacific Med. Journ., June, 1858, from Rev. Ther. Med. Chir., Feb. 15th, 1858.)

Margosa tree.—Edward J. Harvey, (Indian Annals of Medical Science, April, 1857,) states that a peculiar bitter principle has been isolated from the bark of Aradirachta Indica, (Margosa tree,) a native of India, and which is termed *Aradirina.* The bark of this tree has long been used as a tonic and anti-periodic; the seeds and oil from the fruit are anthelmintic; bark of root emmenagogue; the gum which exudes plentifully is said to be aphrodisaic; the leaves are employed locally, as cataplasms for ulcers and cutaneous diseases.—(Brit. and Medico-Chir. Review, July, 1858.)

Saoria.—Dr. E. Strohl (L'Union Médicale) recommends

of potassium. He, however, gives no formula for preparing the salt.—(Am. Jour. Pharm. May, 1858.)

Oil of Dugong.—Mr. W. Hobbs, a surgeon of Australia, recommends the oil of the dugong, (*Halicose dugong*), a cetaceous animal inhabiting the bays and eastern coast of Australia, as a substitute for cod liver oil. The dugong is something between the porpoise and seal in appearance, and attains a length of between 7 and 8 feet, the flesh is highly esteemed as food, not unlike beef, and it yields an oil so bland and sweet, so free from disagreeable flavor or odor, that it may be given in much larger doses than cod liver oil.—(Med. Times and Gazette, and Am. Jour. Pharm. Jan. 1858.)

Tannate of Zinc.—M. Bomewyn observes that the tannate of zinc is highly useful in affections of the eyes, accompanied by muco-purulent secretions. The tannate may be prepared by saturating a solution of pure tannin with a recent and still wet precipitate of oxide of zinc; this is to be filtered and evaporated. Thirty grains in six fluid ounces of water and a half fluid ounce of mucilage is the solution employed.—(Review Med.)

Licoperdon giganteum.—B. N. Richardson, M. D., in a communication to the Medical Circular, details the effect as an anæsthetic of the smoke of the burning puff ball, (Licoperdon giganteum). He is convinced that there is a principle in the puff ball which produces rapid anæsthesia, without evil result, in large doses; narcotising effectually without unpleasant effects. He recommends its use to the physiologist.

Phosphate of Zinc.—Dr. Barnes has recently introduced phosphate of zinc combined with free phosphoric acid in epilepsy and the nervous disorders of enfeebled persons. It is thought to be especially useful after exhaustion of the nervous system from over exertion.

Chemistry of Caustics.—Dr. Wm. Bastick, in an able paper upon the chemistry of caustics, points out the distinct and peculiar chemical action of different caustics upon the living tissues, and divides all of them into two great classes, one of which comprises those which merely kill or destroy the vitality of the living tissue; the other including those which not only destroy

American Ivy.—Dr. J. McCall, (Memphis Jour. of Medicine), recommends the *Ampelopsis quinquefolia* (ivy or Virginia creeper,) as a remedy for dropsy; the bark of the vine is employed, gathered late in autumn when the leaves begin to fall. This has been used hitherto as an expectorant. Dr. McC. states that it appears to stimulate absorption, and the elimination of matter through all the outlets of the system, rather than to act upon any one secretion. It is employed in infusion and decoction.

Permanganate of Potassa.—Dr. G. F. Girdwood recommends the permanganate of potassa as a deodorant escharotic and stimulant combined, detailing the success attending its employment in *cancerous sores, constitutional indolent ulcers, caries of the tibia*, &c.—(London Lancet, 1857.)

New variety of Salep.—Mr. Daniel Hanbury describes in the London Pharmaceutical Journal for April, 1858, a new variety of salep, termed from its mixed Persian and Arabic name Royal salep. The bulb he thinks, however, belongs to a species of allium, and is quite distinct from true salep. The new variety has a bitterish, slightly acrid taste.

Glonoine.—Mr. Redwood, (London Pharm. Jour. April, 1858) describes the process best adapted for making nitro-glycerine or glonoine, and gives Mr. Fuller's experience in regard to its assumed powerful effects as a therapeutical agent, which refute the intense poisonous power ascribed to it, and prove that it does not produce the violent headache in extremely small doses, as asserted by previous experimenters.

Chamomile.—M. Ozanam calls attention (Comptes Rendus) to the remarkable power of the Anthemis nobilis, in preventing serous suppurations when the evil has not advanced too far, and of drying them up when they have existed for a long time. He records four cases in proof of his assertion, which appear to sustain them.—(Am. Jour. Pharm. May, 1858.)

Iodide of Lime.—Dr. Pidduck (Trans. Phar. Society) recommends the iodide of lime, (a preparation of iodine and lime, in a similar state of combination as chlorine and lime, in the so called chloride of lime) in treatment of intractable cases of neuralgia caused by metallic poison, in place of iodide

medicine. He offers the results of several cases to corroborate his opinions. More recently, Drs. Cottex, Ford and Walker, of the Brompton Hospital for consumption, assert the hypophosphites to be inert altogether, this opinion being based upon experience upon their in-door patients, after following the direction of Dr. Churchill carefully.

Prof. Procter, in a paper, (Am. Jour. Pharm. March, 1858), gives explicit formulæ for the preparation of hypophosphorous acid, the salts of lime, soda, ammonia, potassa and sesquioxide of iron; also of syrups of the above. Since Prof. Procter's first paper, he has written notes as addenda to it, and Wm. S. Thompson, E. Scheffer and F. Stearns have offered modifications of the processes, and formulæ for their administration.

Perchloride of Iron in Erysipelas.—M. Louis Mathey confirms the value of the internal employment of perchloride of iron in erysipelas. The disease not only being modified in the first few hours which follow its administration, but arrested, and a radical cure obtained in a very short time.—(Am. Jour. Med. Science, April, 1858, from B. and F. Med. Chirurg. Rev.)

Guarana.—Dr. Herve, (Bull. Gén. de Thérap. 1857), calls attention to an extract of the seeds of *Paullinia sorbilis*, entitled in Brazil, (where it has long been employed), Guarana. Dr. H. for several years has made almost daily use of this substance, (giving it in infusion or in sugared milk), and always with success in chronic diarrhœa and dysentery. It may also be used in the form of pastiles, syrup, pills or tincture.

Euphrasia.—Dr. Kyle (Western Lancet, 1857) recommends the *Euphrasia officinalis*, or Eyebright, in infusion, as a remedy for epilepsy.

Azederach Bark.—Dr. Cornish states that the margosa or neem tree, enjoys considerable reputation in India as a febrifuge. This is understood to be the *Melia azederach*, of the U. S. P., the bark of which is employed here only as an anthelmintic. The inner light colored bark is considered by Dr. C. the best, its taste being at first sweetish, followed by powerful and lasting bitter. He employed it with advantage during six months with nearly all the fever patients that came under his care.—(Am. Jour. Pharm. March, 1858, from Indian Annals of Med. Sci.)

That it acts almost entirely as a fat, and supplies a defect in the system.

That it has no advantage over fats used in food, and may like some of them be taken and rejected.

Nitric Acid in Intermittent Fever.—Dr. J. A. Coons speaks highly of nitric acid in treatment of intermittent fever, being successful in 35 out of 36 cases.—(Ohio Med. and Surg. Jour. 1857.)

Resin of Kousso.—Dr. Martin recommends the resin obtained from the flowers of the kousso plant, extracted in the same manner as is the resin of jalap, in place of the flowers themselves, for the reason that it avoids the nauseating effects of the flowers when given in substance. The dose is from 2 scruples to 1 drachm, dissolved in alcohol, and then evaporated upon a suitable amount of sugar; the product being divided into 5 doses, 4 are given at 6, 7, 8 and 9 o'clock in the evening, the remaining one at 6 o'clock in the morning.—(Med. and Surg. Reporter, Jan. 1858, from Oesterr. Zeitschr. S. Pharmazie.)

Amylene.—A committee, appointed for the purpose of reporting upon amylene to the Académie of Medecine, have condemned the use of it as an anæsthetic, deeming that it exerts an energetic and dangerous influence.—(Am. Jour. of Pharm. from Moniteur des Hôp. Jan. 1858.)

Achillea millefolium, its emmenagogue action.—Dr. Ronzier-Joly ascribes to the common yarrow, *Achillea millefolium*, decided power in promoting the uterine functions, and records cases when its administration procured the reappearance of suppressed lochia. —(Bull. Gen. de Therapeu., 1857.)

Hypophosphites.—Dr. Churchill, in a communication to the Paris Academy of Medicine, has asserted that the salts resulting by a union of hypophosphorous acid with the alkaline bases, are specific in the treatment of tuberculosis. He ascribes the direct cause of tuberculosis to be the decrease in the system of its normal proportion of phosphorus in an oxygenizable state, and he deems the hypophosphites present themselves as the most natural remedies, being soluble, assimilable, and containing phosphorus in the lowest oxidized state in which it can be made available in

tions upon the anti-periodic powers of sulphate of cinchonia, considers it very little, if any, inferior to sulphate of quinia. In some 90 cases of remittent and intermittent fever, he succeeded in all except one in arresting the paroxysms in from one to three days; and in but two instances did the disease reappear after an interval of 8 to 10 days. The form of administering the remedy was alternately in powder and solution, in 10 grain doses; repeated every 6 to 8 hours, and in 2 grain doses every 2 hours.

Perchloride of Iron.—M. Deleau, after employing perchloride of iron in hemorrhage in general, has gradually extended its use to uterine hemorrhage, leucorrhœa, gonorrhœa, chancre, vaginal ulceration, and scrofulous affections. After using it two years, he concludes:

1. That the perchloride may be used internally or externally without any danger.
2. That it is the most powerful hæmostatic known.
3. That it especially exerts its therapeutical effects upon the mucous membrane, as in gonorrhœa, leucorrhœa, bronchial catarrh, etc.
4. That it is an antisyphilitic.
5. That it is a powerful agent in scrofulous disease.—(Comptes Rendus and Montreal Med. Chem. Dec. 1857.)

Iodoform.—This substance, from the large percentage of Iodine in it, promises to be a valuable therapeutical agent, replacing iodine in many cases with advantage. A statement of its therapeutic properties, and effects, are published in the Phila. Med. and Surg. Journal for Nov. 1857, taken from the Arch. Gen. de Med.

Cod Liver Oil.—Dr. E. Smith, in a paper read before the Med. Soc. of London, upon the therapeutic effect of cod liver oil, states the results of its use upon more than 500 cases of phthisis, and among his final conclusions are the following:

That neither cod liver oil nor fat of any kind removes phthisis.

That the cases of arrest of disease are very few.

That commonly the disease progresses, and is as fatal now as it was before the oil came into general use.

That in about half the cases the rate of progress is retarded.

That obtained by Boudault's process is considered the best. As found in commerce, it consists of neutral pepsine, to which lactic acid has been added, and brought by gentle heat to a syrupy consistence, and then mixed with dried starch. It is in this form a fawn-colored powder of peculiar odor and taste, and slightly coherent.—(Virg. Med. Jour. 1857.)

Condensed Milk.—In a report made to the New York Academy of Medicine, upon condensed milk, and published in the Am. Med. Gaz. Dec. 1857, it is stated that the article known in New York as Borden's Condensed Milk, for purity and permanence is unequalled in the annals of the milk trade, being pure milk deprived of most of its water, and deficient in none of its nutritive elements. The report gives in detail the process of preparing and condensing the milk, which consists essentially in first depriving it of its animal heat, and after having coagulated a portion of viscid albuminous matter which it contains, by raising it quickly to a temperature of 175° F., it is placed in a suitable vacuum apparatus, and evaporated to one fourth its bulk, at a temperature not exceeding 120° F. Its therapeutic value is restricted to that of pure milk and cream, and wherever these are indicated, the condensed milk is equally valuable; unlike boiled milk, it has no tendency to constipate the bowels. Its qualities of portability and permanence render it especially valuable in large cities and for use on shipboard.

Oil of Banioul Nut, a mild purgative.—The Banioul-tree, (Aleuritis trilobas), abundant in tropical climes, and naturalized in the West Indies, is found growing spontaneously at the Spanish Islands, Cook's Archipelago, Moluccas, etc.

The kernel furnishes by cold pressure a very fluid oil of an amber color, odorless and tasteless, thickens at 4° above 0. C., and solidifies at 0. C. It is insoluble in alcohol, readily saponifiable and very drying. It is purgative, without producing nausea or griping, and seems to be free from an emeto-cathartic principle. Its *modus operandi*, according to Dr. S. Rourke, is similar to that of bland oils, blended with a decided contractile action upon the whole muscular-coating of the intestine. The dose for adults is from one to two ounces.

Cinchonia vs. *Quinia.*—Dr. Wm. M. McPheeters, from observa-

cians, who have investigated its action, state that it acts quicker, more energetically, and in smaller doses; the dose is from 5 to 20 grains; it has a marked action upon the healthy pharyngeal and buccal mucous membrane; in the dose of 20 to 30 grains it produces in the mouth and throat a particular sensation of constriction, the glandular secretion diminishing under its use. Those physicians who have experimented with it think that by the introduction into therapeutics of the alkaline bromates and iodates, an advance will be made towards the cure of pseudo-membranous affections.—(Rev. de Therap. and Am. Med. Monthly, Oct. 1857.)

Plantago Major.—Dr. D. W. Maull, in the Medical and Surgical Reporter, vol. x. No. 10, calls attention to the use of Plantago major, or yard plantain, as a remedy for the bite inflicted by the venomous spider, which is so distressing and dangerous as to be compared to that of the rattlesnake. The spider is found in cellars, along old fences, in lofts, and in dark and damp places generally. It is black with a red spot upon its back, the effects of its bite are said to be rigidity of the limb, excruciating pain, with but little swelling, and as the poison diffuses itself, gastric irritability follows, and other alarming symptoms, sometimes ending fatally. The expressed juice from the fresh plantain leaves administered in doses of 3 or 4 ounces is stated to give almost immediate relief.

Iodide of Cadmium.—Dr. Garrod recommends the external use of iodide of cadmium in place of free iodine, as in the Ung. Iodinii Co., and in place of the iodide of lead and of potassium, it forming a perfectly soft and white ointment, producing but little action upon the skin, not discoloring it, and appearing to be readily absorbed when properly applied with friction. His formula is one drachm of the iodide of cadmium to one ounce of lard.—(Am. Drug. Circular, Jan. 1858.)

Pepsine.—Pepsine has been strongly recommended by various medical authorities as a useful remedy in dyspepsia, proving to be a valuable digestive agent in cases of want of appetite, of slow and painful digestion, diarrhœa, vomiting, and the weak digestion which exists at the commencement of convalescence from serious fever, and in the course of most chronic diseases.

—(Mont. Med. Chronicle, Jan. 1858; from Illustrated Inventor.)

Aromatic Syr. Rhubarb.—Dr. R. H. Stabler, pharmaceutist, of Alexandria, states that in preparing aromatic syrup of rhubarb he has obtained a more elegant preparation by modifying the process of the Pharmacopœia in the following manner: displace the aromatics separately, with a portion of the dilute alcohol, until four ounces of the tincture are obtained; set this tincture aside, and exhaust the rhubarb with the remainder of menstruum; then by means of a water bath evaporate this liquor to twelve fluid ounces; to this add the aromatic tincture previously prepared, and three pints of water, filter through paper, and add seven and a half pounds of sugar; dissolve with a gentle heat. It should measure seven parts when done.

MATERIA MEDICA.

Apocynum androsæmifolium.—Dr. Lannon, of Ohio, recommends the employment of the Apocynum androsæmifolium, or *dogsbane*, in dyspepsia and kindred diseases. It has been heretofore employed but little, those authors who have noticed it at all, assigning to it emetic and tonic powers. Dr. L. also states that it possesses laxative powers when administered in small doses, acting in larger ones promptly as a cathartic. He recommends the freshly dried root employed in decoction or infusion.

Potassio-Lactate of Iron.—Behrend (London Lancet, 1857) has successfully employed the potassio-lactate of iron in treatment of chancre.

Belladonna in arresting the secretion of Milk.—Dr. Connally, of Georgia, has employed successfully belladonna in arresting the secretion of milk, in the form of a watery solution of the extract applied to the areola.

Tannate of Zinc.—Tannate of zinc has been recommended in catarrhal affection of the eyes, employed in the form of solution, 30 grains to six fluid ounces of water and one half fluid ounce of mucilage.—(Rev. Med.)

Iodate of Potassa.—The iodate of potassa has been substituted with much success for chlorate of potassa in the treatment of various affections of the buccal mucous membrane. Several French physi-

the fruit of *Maesa picta*, called *saoria*, as a valuable vermifuge, superior to kousso as a *tæniafuge*. The plant is a native of Abyssinia.—(Brit. and Foreign Medico-Chir. Review, July, 1858.)

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Oxide of Zinc in profuse sweating.—Dr. Jackson (Boston

vitality but decompose and dissolve the tissue, whether dead or living. These two classes are divisible into sub-classes, on account of a peculiar mode of action in each individual case. —(Am. Drug. Circular, Jan. 1858.)

Glycerine in Croup.—E. R. Mayer, M. D. in a communication to the Am. Jour Med. Science, April, 1858, recommends the local application of glycerine in treatment of membranous croup. Its peculiar softening, adhering and penetrating power when applied to a mucous surface, seeming to render it especially useful in softening down the excretion found in the larynx during the progress of this disease.

Picric Acid.—MM. Calvert and Moffert detail some experiments with picric acid and its salts of ammonia, iron, nickel and zinc. These experiments determine the value of these salts, and that they are closely allied to quinia and its salts in therapeutical action. The picrate of iron is useful in treatment of many forms of cephalalgia, while that of ammonia is better adapted to the treatment of intermittents and hypochondria. Associated with gallic acid and opium, the latter salt has succeeded well in the treatment of a great number of cases of the most obstinate diarrhœa. A remarkable feature of the use of this remedy, is that it induces a yellow hue of the skin, much resembling that of jaundice; the effect is produced in from two to six hours, and it disappears in about the same time when the remedy is discontinued. The dose of the salts is about one-sixth of a grain each hour.—(Pacific Med. Journ., June, 1858, from Rev. Ther. Med. Chir., Feb. 15th, 1858.)

Margosa tree.—Edward J. Harvey, (Indian Annals of Medical Science, April, 1857,) states that a peculiar bitter principle has been isolated from the bark of Aradirachta Indica, (Margosa tree,) a native of India, and which is termed *Aradirina.* The bark of this tree has long been used as a tonic and anti-periodic; the seeds and oil from the fruit are anthelmintic; bark of root emmenagogue; the gum which exudes plentifully is said to be aphrodisaic; the leaves are employed locally, as cataplasms for ulcers and cutaneous diseases.—(Brit. and Medico-Chir. Review, July, 1858.)

Saoria.—Dr. E. Strohl (L'Union Médicale) recommends

of potassium. He, however, gives no formula for preparing the salt.—(Am. Jour. Pharm. May, 1858.)

Oil of Dugong.—Mr. W. Hobbs, a surgeon of Australia, recommends the oil of the dugong, (*Halicose dugong*), a cetaceous animal inhabiting the bays and eastern coast of Australia, as a substitute for cod liver oil. The dugong is something between the porpoise and seal in appearance, and attains a length of between 7 and 8 feet, the flesh is highly esteemed as food, not unlike beef, and it yields an oil so bland and sweet, so free from disagreeable flavor or odor, that it may be given in much larger doses than cod liver oil.—(Med. Times and Gazette, and Am. Jour. Pharm. Jan. 1858.)

Tannate of Zinc.—M. Bomewyn observes that the tannate of zinc is highly useful in affections of the eyes, accompanied by muco-purulent secretions. The tannate may be prepared by saturating a solution of pure tannin with a recent and still wet precipitate of oxide of zinc; this is to be filtered and evaporated. Thirty grains in six fluid ounces of water and a half fluid ounce of mucilage is the solution employed.—(Review Med.)

Licoperdon giganteum.—B. N. Richardson, M. D., in a communication to the Medical Circular, details the effect as an anæsthetic of the smoke of the burning puff ball, (Licoperdon giganteum). He is convinced that there is a principle in the puff ball which produces rapid anæsthesia, without evil result, in large doses; narcotising effectually without unpleasant effects. He recommends its use to the physiologist.

Phosphate of Zinc.—Dr. Barnes has recently introduced phosphate of zinc combined with free phosphoric acid in epilepsy and the nervous disorders of enfeebled persons. It is thought to be especially useful after exhaustion of the nervous system from over exertion.

Chemistry of Caustics.—Dr. Wm. Bastick, in an able paper upon the chemistry of caustics, points out the distinct and peculiar chemical action of different caustics upon the living tissues, and divides all of them into two great classes, one of which comprises those which merely kill or destroy the vitality of the living tissue; the other including those which not only destroy

American Ivy.—Dr. J. McCall, (Memphis Jour. of Medicine), recommends the *Ampelopsis quinquefolia* (ivy or Virginia creeper,) as a remedy for dropsy; the bark of the vine is employed, gathered late in autumn when the leaves begin to fall. This has been used hitherto as an expectorant. Dr. McC. states that it appears to stimulate absorption, and the elimination of matter through all the outlets of the system, rather than to act upon any one secretion. It is employed in infusion and decoction.

Permanganate of Potassa.—Dr. G. F. Girdwood recommends the permanganate of potassa as a deodorant escharotic and stimulant combined, detailing the success attending its employment in *cancerous sores, constitutional indolent ulcers, caries of the tibia,* &c.—(London Lancet, 1857.)

New variety of Salep.—Mr. Daniel Hanbury describes in the London Pharmaceutical Journal for April, 1858, a new variety of salep, termed from its mixed Persian and Arabic name Royal salep. The bulb he thinks, however, belongs to a species of allium, and is quite distinct from true salep. The new variety has a bitterish, slightly acrid taste.

Glonoine.—Mr. Redwood, (London Pharm. Jour. April, 1858) describes the process best adapted for making nitro-glycerine or glonoine, and gives Mr. Fuller's experience in regard to its assumed powerful effects as a therapeutical agent, which refute the intense poisonous power ascribed to it, and prove that it does not produce the violent headache in extremely small doses, as asserted by previous experimenters.

Chamomile.—M. Ozanam calls attention (Comptes Rendus) to the remarkable power of the Anthemis nobilis, in preventing serous suppurations when the evil has not advanced too far, and of drying them up when they have existed for a long time. He records four cases in proof of his assertion, which appear to sustain them.—(Am. Jour. Pharm. May, 1858.)

Iodide of Lime.—Dr. Pidduck (Trans. Phar. Society) recommends the iodide of lime, (a preparation of iodine and lime, in a similar state of combination as chlorine and lime, in the so called chloride of lime) in treatment of intractable cases of neuralgia caused by metallic poison, in place of iodide

medicine. He offers the results of several cases to corroborate his opinions. More recently, Drs. Cottex, Ford and Walker, of the Brompton Hospital for consumption, assert the hypophosphites to be inert altogether, this opinion being based upon experience upon their in-door patients, after following the direction of Dr. Churchill carefully.

Prof. Procter, in a paper, (Am. Jour. Pharm. March, 1858), gives explicit formulæ for the preparation of hypophosphorous acid, the salts of lime, soda, ammonia, potassa and sesquioxide of iron; also of syrups of the above. Since Prof. Procter's first paper, he has written notes as addenda to it, and Wm. S. Thompson, E. Scheffer and F. Stearns have offered modifications of the processes, and formulæ for their administration.

Perchloride of Iron in Erysipelas.—M. Louis Mathey confirms the value of the internal employment of perchloride of iron in erysipelas. The disease not only being modified in the first few hours which follow its administration, but arrested, and a radical cure obtained in a very short time.—(Am. Jour. Med. Science, April, 1858, from B. and F. Med. Chirurg. Rev.)

Guarana.—Dr. Herve, (Bull. Gén. de Thérap. 1857), calls attention to an extract of the seeds of *Paullinia sorbilis*, entitled in Brazil, (where it has long been employed), Guarana. Dr. H. for several years has made almost daily use of this substance, (giving it in infusion or in sugared milk), and always with success in chronic diarrhœa and dysentery. It may also be used in the form of pastiles, syrup, pills or tincture.

Euphrasia.—Dr. Kyle (Western Lancet, 1857) recommends the *Euphrasia officinalis*, or Eyebright, in infusion, as a remedy for epilepsy.

Azederach Bark.—Dr. Cornish states that the margosa or neem tree, enjoys considerable reputation in India as a febrifuge. This is understood to be the *Melia azederach*, of the U. S. P., the bark of which is employed here only as an anthelmintic. The inner light colored bark is considered by Dr. C. the best, its taste being at first sweetish, followed by powerful and lasting bitter. He employed it with advantage during six months with nearly all the fever patients that came under his care.—(Am. Jour. Pharm. March, 1858, from Indian Annals of Med. Sci.)

That it acts almost entirely as a fat, and supplies a defect in the system.

That it has no advantage over fats used in food, and may like some of them be taken and rejected.

Nitric Acid in Intermittent Fever.—Dr. J. A. Coons speaks highly of nitric acid in treatment of intermittent fever, being successful in 35 out of 36 cases.—(Ohio Med. and Surg. Jour. 1857.)

Resin of Kousso.—Dr. Martin recommends the resin obtained from the flowers of the kousso plant, extracted in the same manner as is the resin of jalap, in place of the flowers themselves, for the reason that it avoids the nauseating effects of the flowers when given in substance. The dose is from 2 scruples to 1 drachm, dissolved in alcohol, and then evaporated upon a suitable amount of sugar; the product being divided into 5 doses, 4 are given at 6, 7, 8 and 9 o'clock in the evening, the remaining one at 6 o'clock in the morning.—(Med. and Surg. Reporter, Jan. 1858, from Oesterr. Zeitschr. S. Pharmazie.)

Amylene.—A committee, appointed for the purpose of reporting upon amylene to the Académie of Medecine, have condemned the use of it as an anæsthetic, deeming that it exerts an energetic and dangerous influence.—(Am. Jour. of Pharm. from Moniteur des Hôp. Jan. 1858.)

Achillea millefolium, its emmenagogue action.—Dr. Ronzier-Joly ascribes to the common yarrow, *Achillea millefolium*, decided power in promoting the uterine functions, and records cases when its administration procured the reappearance of suppressed lochia. —(Bull. Gen. de Therapeu., 1857.)

Hypophosphites.—Dr. Churchill, in a communication to the Paris Academy of Medicine, has asserted that the salts resulting by a union of hypophosphorous acid with the alkaline bases, are specific in the treatment of tuberculosis. He ascribes the direct cause of tuberculosis to be the decrease in the system of its normal proportion of phosphorus in an oxygenizable state, and he deems the hypophosphites present themselves as the most natural remedies, being soluble, assimilable, and containing phosphorus in the lowest oxidized state in which it can be made available in

tions upon the anti-periodic powers of sulphate of cinchonia, considers it very little, if any, inferior to sulphate of quinia. In some 90 cases of remittent and intermittent fever, he succeeded in all except one in arresting the paroxysms in from one to three days; and in but two instances did the disease reappear after an interval of 8 to 10 days. The form of administering the remedy was alternately in powder and solution, in 10 grain doses; repeated every 6 to 8 hours, and in 2 grain doses every 2 hours.

Perchloride of Iron.—M. Deleau, after employing perchloride of iron in hemorrhage in general, has gradually extended its use to uterine hemorrhage, leucorrhœa, gonorrhœa, chancre, vaginal ulceration, and scrofulous affections. After using it two years, he concludes:

1. That the perchloride may be used internally or externally without any danger.
2. That it is the most powerful hæmostatic known.
3. That it especially exerts its therapeutical effects upon the mucous membrane, as in gonorrhœa, leucorrhœa, bronchial catarrh, etc.
4. That it is an antisyphilitic.
5. That it is a powerful agent in scrofulous disease.—(Comptes Rendus and Montreal Med. Chem. Dec. 1857.)

Iodoform.—This substance, from the large percentage of Iodine in it, promises to be a valuable therapeutical agent, replacing iodine in many cases with advantage. A statement of its therapeutic properties, and effects, are published in the Phila. Med. and Surg. Journal for Nov. 1857, taken from the Arch. Gen. de Med.

Cod Liver Oil.—Dr. E. Smith, in a paper read before the Med. Soc. of London, upon the therapeutic effect of cod liver oil, states the results of its use upon more than 500 cases of phthisis, and among his final conclusions are the following:

That neither cod liver oil nor fat of any kind removes phthisis.

That the cases of arrest of disease are very few.

That commonly the disease progresses, and is as fatal now as it was before the oil came into general use.

That in about half the cases the rate of progress is retarded.

That obtained by Boudault's process is considered the best. As found in commerce, it consists of neutral pepsine, to which lactic acid has been added, and brought by gentle heat to a syrupy consistence, and then mixed with dried starch. It is in this form a fawn-colored powder of peculiar odor and taste, and slightly coherent.—(Virg. Med. Jour. 1857.)

Condensed Milk.—In a report made to the New York Academy of Medicine, upon condensed milk, and published in the Am. Med. Gaz. Dec. 1857, it is stated that the article known in New York as Borden's Condensed Milk, for purity and permanence is unequalled in the annals of the milk trade, being pure milk deprived of most of its water, and deficient in none of its nutritive elements. The report gives in detail the process of preparing and condensing the milk, which consists essentially in first depriving it of its animal heat, and after having coagulated a portion of viscid albuminous matter which it contains, by raising it quickly to a temperature of 175° F., it is placed in a suitable vacuum apparatus, and evaporated to one fourth its bulk, at a temperature not exceeding 120° F. Its therapeutic value is restricted to that of pure milk and cream, and wherever these are indicated, the condensed milk is equally valuable; unlike boiled milk, it has no tendency to constipate the bowels. Its qualities of portability and permanence render it especially valuable in large cities and for use on shipboard.

Oil of Banioul Nut, a mild purgative.—The Banioul-tree, (Aleuritis trilobas), abundant in tropical climes, and naturalized in the West Indies, is found growing spontaneously at the Spanish Islands, Cook's Archipelago, Moluccas, etc.

The kernel furnishes by cold pressure a very fluid oil of an amber color, odorless and tasteless, thickens at 4° above 0. C., and solidifies at 0. C. It is insoluble in alcohol, readily saponifiable and very drying. It is purgative, without producing nausea or griping, and seems to be free from an emeto-cathartic principle. Its *modus operandi*, according to Dr. S. Rourke, is similar to that of bland oils, blended with a decided contractile action upon the whole muscular-coating of the intestine. The dose for adults is from one to two ounces.

Cinchonia vs. *Quinia.*—Dr. Wm. M. McPheeters, from observa-

cians, who have investigated its action, state that it acts quicker, more energetically, and in smaller doses; the dose is from 5 to 20 grains; it has a marked action upon the healthy pharyngeal and buccal mucous membrane; in the dose of 20 to 80 grains it produces in the mouth and throat a particular sensation of constriction, the glandular secretion diminishing under its use. Those physicians who have experimented with it think that by the introduction into therapeutics of the alkaline bromates and iodates, an advance will be made towards the cure of pseudo-membranous affections.—(Rev. de Therap. and Am. Med. Monthly, Oct. 1857.)

Plantago Major.—Dr. D. W. Maull, in the Medical and Surgical Reporter, vol. x. No. 10, calls attention to the use of Plantago major, or yard plantain, as a remedy for the bite inflicted by the venomous spider, which is so distressing and dangerous as to be compared to that of the rattlesnake. The spider is found in cellars, along old fences, in lofts, and in dark and damp places generally. It is black with a red spot upon its back, the effects of its bite are said to be rigidity of the limb, excruciating pain, with but little swelling, and as the poison diffuses itself, gastric irritability follows, and other alarming symptoms, sometimes ending fatally. The expressed juice from the fresh plantain leaves administered in doses of 3 or 4 ounces is stated to give almost immediate relief.

Iodide of Cadmium.—Dr. Garrod recommends the external use of iodide of cadmium in place of free iodine, as in the Ung. Iodinii Co., and in place of the iodide of lead and of potassium, it forming a perfectly soft and white ointment, producing but little action upon the skin, not discoloring it, and appearing to be readily absorbed when properly applied with friction. His formula is one drachm of the iodide of cadmium to one ounce of lard.—(Am. Drug. Circular, Jan. 1858.)

Pepsine.—Pepsine has been strongly recommended by various medical authorities as a useful remedy in dyspepsia, proving to be a valuable digestive agent in cases of want of appetite, of slow and painful digestion, diarrhœa, vomiting, and the weak digestion which exists at the commencement of convalescence from serious fever, and in the course of most chronic diseases.

—(Mont. Med. Chronicle, Jan. 1858; from Illustrated Inventor.)

Aromatic Syr. Rhubarb.—Dr. R. H. Stabler, pharmaceutist, of Alexandria, states that in preparing aromatic syrup of rhubarb he has obtained a more elegant preparation by modifying the process of the Pharmacopœia in the following manner: displace the aromatics separately, with a portion of the dilute alcohol, until four ounces of the tincture are obtained; set this tincture aside, and exhaust the rhubarb with the remainder of menstruum; then by means of a water bath evaporate this liquor to twelve fluid ounces; to this add the aromatic tincture previously prepared, and three pints of water, filter through paper, and add seven and a half pounds of sugar; dissolve with a gentle heat. It should measure seven parts when done.

MATERIA MEDICA.

Apocynum androsæmifolium.—Dr. Lannon, of Ohio, recommends the employment of the Apocynum androsæmifolium, or *dogsbane*, in dyspepsia and kindred diseases. It has been heretofore employed but little, those authors who have noticed it at all, assigning to it emetic and tonic powers. Dr. L. also states that it possesses laxative powers when administered in small doses, acting in larger ones promptly as a cathartic. He recommends the freshly dried root employed in decoction or infusion.

Potassio-Lactate of Iron.—Behrend (London Lancet, 1857) has successfully employed the potassio-lactate of iron in treatment of chancre.

Belladonna in arresting the secretion of Milk.—Dr. Connally, of Georgia, has employed successfully belladonna in arresting the secretion of milk, in the form of a watery solution of the extract applied to the areola.

Tannate of Zinc.—Tannate of zinc has been recommended in catarrhal affection of the eyes, employed in the form of solution, 30 grains to six fluid ounces of water and one half fluid ounce of mucilage.—(Rev. Med.)

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Quinium.—MM. Delondre and A. Lebarraque have proposed a formula for a compound extract of cinchona, called quinium, and which has received the approval of the Academy of Medicine of Paris. They were led to this by the high price of quinia and its salts for a few years back having driven physicians to use the powdered bark of all kinds of cinchona instead. The quinium is simply an extract, (hydro-alcoholic,) which contains quinia and cinchonia in the proportion of two parts of the former to one of the latter; this proportion is obtained by using barks, the percentage of alkaloids in which is previously known.—(Bulletin Général de Thérapeutique and Brit. and For. Medico-Chir. Review, July, 1858.)

New method of preparing Phosphate of Lime of Bones.—M. Dannecy, of Bordeaux, on the ground of the advantage which exists in the administration of phosphate of lime in the molecular state, which is best adapted for its incorporation into the living organs, proposes the following preparation of this salt: Beef bones, washed and powdered, common water, and pure carbonate of potash are boiled together for an hour, when a perfectly homogeneous substance is formed; this substance is thrown upon a paper filter and the alkaline liquid flows off, the mass is then washed at several intervals with hot water; it is then dried and passed through a silk sieve, when a powder of excessive tenacity is obtained, soft to the touch, and equal in mobility to lycopodium. This powder contains all the natural elements of bones, but without the gelatin which holds them together; the disaggregation attains its utmost limit, and is truly molecular. The phosphate of lime of bones thus prepared is easily kept in suspension, in potions, and in cod liver oil, and it is easily moulded into various pharmaceutical forms, as pastiles, pills, etc. —(Ibid.)

Artificial Rose-water.—Rudolph Wagner states that the products of the spontaneous decomposition of salicylate of potash are characterized by a strong odor of roses. The salt is quickly obtained by decomposing salicylate of methylene (essence of gaultheria,) by caustic potassa; crystals of salicylate of potassa are precipitated, and the supernatant solution has a strong odor of roses, and by distillation affords a rose-water of fine quality.

operative. Among the most recent and valuable applications of steam in this condition, are the decomposition of oils and fats for the manufacture of glycerin, and the solution of the silica of quartz rocks in the manufacture of soluble glass, elsewhere noticed in this report.

Mercurial Ointment.—M. Coldefür, a chemist of Geneva, describes a new method of making mercurial ointment, discovered by him accidentally during the progress of some investigations upon ozone. It seems that tallow becomes ozonized in the presence of an atmosphere of that gas, and when in that condition, by simply mechanical action, rapidly absorbs mercury. The process for preparing the ointment is as follows: put into a large porcelain capsule sixteen ounces of lard, perforated with holes, so as to increase the extent of surface, and place half an ounce of phosphorus in a vessel suspended on a thread above the lard; cover the whole with a glass receiver, and at the end of a fortnight ozonization is complete. This lard so prepared is introduced into a wide-mouthed bottle, and melted on a sand bath at a temperature of 194° F. Four ounces of mercury are now gently heated and rapidly poured into the lard; the vessel is then briskly agitated for some minutes, and the operation is terminated by quickly plunging the vessel in cold water.—(N. O. Med. and Surg. Journ., May, 1858.)

New sophistication of Quinine.—Sulphate of aricine is stated in the German Journals to be extensively employed in Europe in the adulteration of sulphate of quinine. The falsification is shown when the etherial solution is evaporated and tested with nitric acid.

James' Powder.—E. S. Wayne has investigated the asserted difference existing between the patented James' powder as manufactured in England, and that directed in our works on Pharmacy, as a substitute; and reviewing the process of Dr. James, concludes that there is little or no resemblance between them, the usual preparation being antimoniate of the teroxide of antimony, while the imported article is a mixture of neutral antimoniate of potassa with phosphate of lime in equal proportions.—(Cin. Lancet and Observer, April, 1858.)

ly destroy them, and prevent their reappearance.—(Am. Journ. Pharm., June, 1858.)

Fluid Extract Buchu.—J. Henry Harte adds one more to the several formulæ now published for making a concentrated fluid extract of buchu, in the Am. Journ. Pharm., June, 1858. The peculiarity of his process consists in the addition of carbonate of potash near the end of the process for the purpose of dissolving the oleo-resinous matter thrown down during the evaporation.

Valerianate of Ammonia.—Frederick Stearns (Peninsular and Independent Medical Journal, April, 1858) gives a process for preparing crystallized valerianate of ammonia, consisting of supersaturating, carefully dried monohydrated valerianic acid with carbonate of ammonia.

Glycerole of Lactucarium.—Frederick Stearns, in same Journal for June, 1858, gives a formula for a solution of the active matter of lactucarium in glycerine, intended as a substitute for less agreeable and less active preparations of the same drug.

Compound Syrup of Yellow Dock and Sarsaparilla.—Frederick Stearns, in the same Journal, for August, proposes a formula for a compound syrup of yellow dock and sarsaparilla, based upon the process of the Pharmacopœia for Syr. Sarsap. Comp.

Fluid Extracts.—Henry Thayer and F. Stearns point out, in the Peninsular and Medical Independent Journal, for August and September, 1858, the points which it is necessary to observe, in their opinion, in perfecting a complete series of these new and important preparations.

"*Stame.*"—Edward Parrish, in the May number of the Am. Druggists' Circular, notices the modern application of "stame," (highly heated steam,) for various purposes in its application to Pharmacy. Under circumstances of intense heat and high pressure, steam seems to acquire new properties: it is capable of decomposing substances, which, by the use of ordinary chemical agencies, are wholly intractable, and itself becomes decomposable by influences, which, at a lower temperature, would be in-

incidentally, that he has always succeeded in purifying spiritous liquors, and freeing them from their essential oils, by using caustic potassa with recently calcined wood-charcoal.—(Am. Journ. Pharm., May, 1858.)

Method of Preparing Castor Oil.—M. Pavesi (Repertoire de Pharmacie, Sept., 1857) gives the following method for purifying castor oil: Take 1000 parts of the oil to be treated, 25 parts of purified bone black, 10 parts of calcined magnesia. Mix these carefully in a convenient vessel of glass or tinned iron, and let it stand during three days, with occasional agitation, and filter through paper or felt. Thus obtained, the oil is less viscid, limpid, nearly colorless, of a sweet taste, inodorous, very soluble in alcohol, and bears an intense cold.—(Am. Journ. Pharm., May, 1858.)

Citrate of Strychnia and Iron.—Prof. Procter suggests a formula for this salt, which has been employed in the English hospitals, for dyspepsia of an atonic character, as a powerful emmenagogue, etc.—(Am. Journ. Pharm., May, 1858.)

Solvent powers of Simple Syrup.—Dr. J. Rowland Hill gives, in an interesting paper, the specific solvent powers of sugar in solution, and describes its value as a menstruum, in which to exhibit certain medicinal agents.—(Amer. Journ. Pharm., June, 1858.)

Podophyllin.—John W. Cadbury confirms from experiment, the fact, asserted by the so-called eclectics, that the active and medicinal properties of the Podophyllum peltatum reside in its resin.—(Am. Journ. Pharm., June, 1858.)

Dilute Acetic Acid.—John M. Maisch, in a communication to the Am. Journ. Pharm., June, 1858, upon diluted acetic acid, states that acetic acid of the specific gravity of 1·046 should be employed instead of 1·041 of the U. S. P., in order that the dilute acid shall be of the strength ordered in the same work.

Ether in preserving Drugs.—Mr. Maisch recommends that ether be employed to kill the mites, the larvæ and the bugs, which infest and injure drugs, by enclosing the drug affected with a little ether in a close vessel; this he states will effectual-

Soap Liniment.—A. P. Sharp recommends the oleine soap of commerce in place of the officinal one in the preparation of soap liniment, on account of its containing no margarin, and thus enabling the liniment to stand a lower temperature without congelation.—(Ibid.)

Prepared Honey.—Chas. Caspari proposes to purify commercial honey by means of gelatin and tannin, and gives his method for so doing.—(Ibid.)

Compound decoction of Aloes.—Prof. Grahame suggests that percolation be adopted for the preparation of this decoction, and gives the process he deems expedient, and states that it forms an elegant and much more desirable product than by the old way, in which the ingredients are exposed to long continued heat.—(Ibid.)

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tions upon the anti-periodic powers of sulphate of cinchonia, considers it very little, if any, inferior to sulphate of quinia. In some 90 cases of remittent and intermittent fever, he succeeded in all except one in arresting the paroxysms in from one to three days; and in but two instances did the disease reappear after an interval of 8 to 10 days. The form of administering the remedy was alternately in powder and solution, in 10 grain doses; repeated every 6 to 8 hours, and in 2 grain doses every 2 hours.

Perchloride of Iron.—M. Deleau, after employing perchloride of iron in hemorrhage in general, has gradually extended its use to uterine hemorrhage, leucorrhœa, gonorrhœa, chancre, vaginal ulceration, and scrofulous affections. After using it two years, he concludes:

1. That the perchloride may be used internally or externally without any danger.
2. That it is the most powerful hæmostatic known.
3. That it especially exerts its therapeutical effects upon the mucous membrane, as in gonorrhœa, leucorrhœa, bronchial catarrh, etc.
4. That it is an antisyphilitic.
5. That it is a powerful agent in scrofulous disease.—(Comptes Rendus and Montreal Med. Chem. Dec. 1857.)

Iodoform.—This substance, from the large percentage of Iodine in it, promises to be a valuable therapeutical agent, replacing iodine in many cases with advantage. A statement of its therapeutic properties, and effects, are published in the Phila. Med. and Surg. Journal for Nov. 1857, taken from the Arch. Gen. de Med.

Cod Liver Oil.—Dr. E. Smith, in a paper read before the Med. Soc. of London, upon the therapeutic effect of cod liver oil, states the results of its use upon more than 500 cases of phthisis, and among his final conclusions are the following:

That neither cod liver oil nor fat of any kind removes phthisis.

That the cases of arrest of disease are very few.

That commonly the disease progresses, and is as fatal now as it was before the oil came into general use.

That in about half the cases the rate of progress is retarded.

That obtained by Boudault's process is considered the best. As found in commerce, it consists of neutral pepsine, to which lactic acid has been added, and brought by gentle heat to a syrupy consistence, and then mixed with dried starch. It is in this form a fawn-colored powder of peculiar odor and taste, and slightly coherent.—(Virg. Med. Jour. 1857.)

Condensed Milk.—In a report made to the New York Academy of Medicine, upon condensed milk, and published in the Am. Med. Gaz. Dec. 1857, it is stated that the article known in New York as Borden's Condensed Milk, for purity and permanence is unequalled in the annals of the milk trade, being pure milk deprived of most of its water, and deficient in none of its nutritive elements. The report gives in detail the process of preparing and condensing the milk, which consists essentially in first depriving it of its animal heat, and after having coagulated a portion of viscid albuminous matter which it contains, by raising it quickly to a temperature of 175° F., it is placed in a suitable vacuum apparatus, and evaporated to one fourth its bulk, at a temperature not exceeding 120° F. Its therapeutic value is restricted to that of pure milk and cream, and wherever these are indicated, the condensed milk is equally valuable; unlike boiled milk, it has no tendency to constipate the bowels. Its qualities of portability and permanence render it especially valuable in large cities and for use on shipboard.

Oil of Banioul Nut, a mild purgative.—The Banioul-tree, (Aleuritis trilobas), abundant in tropical climes, and naturalized in the West Indies, is found growing spontaneously at the Spanish Islands, Cook's Archipelago, Moluccas, etc.

The kernel furnishes by cold pressure a very fluid oil of an amber color, odorless and tasteless, thickens at 4° above 0. C., and solidifies at 0. C. It is insoluble in alcohol, readily saponifiable and very drying. It is purgative, without producing nausea or griping, and seems to be free from an emeto-cathartic principle. Its *modus operandi*, according to Dr. S. Rourke, is similar to that of bland oils, blended with a decided contractile action upon the whole muscular-coating of the intestine. The dose for adults is from one to two ounces.

Cinchonia vs. *Quinia.*—Dr. Wm. M. McPheeters, from observa-

cians, who have investigated its action, state that it acts quicker, more energetically, and in smaller doses; the dose is from 5 to 20 grains; it has a marked action upon the healthy pharyngeal and buccal mucous membrane; in the dose of 20 to 30 grains it produces in the mouth and throat a particular sensation of constriction, the glandular secretion diminishing under its use. Those physicians who have experimented with it think that by the introduction into therapeutics of the alkaline bromates and iodates, an advance will be made towards the cure of pseudo-membranous affections.—(Rev. de Therap. and Am. Med. Monthly, Oct. 1857.)

Plantago Major.—Dr. D. W. Maull, in the Medical and Surgical Reporter, vol. x. No. 10, calls attention to the use of Plantago major, or yard plantain, as a remedy for the bite inflicted by the venomous spider, which is so distressing and dangerous as to be compared to that of the rattlesnake. The spider is found in cellars, along old fences, in lofts, and in dark and damp places generally. It is black with a red spot upon its back, the effects of its bite are said to be rigidity of the limb, excruciating pain, with but little swelling, and as the poison diffuses itself, gastric irritability follows, and other alarming symptoms, sometimes ending fatally. The expressed juice from the fresh plantain leaves administered in doses of 3 or 4 ounces is stated to give almost immediate relief.

Iodide of Cadmium.—Dr. Garrod recommends the external use of iodide of cadmium in place of free iodine, as in the Ung. Iodinii Co., and in place of the iodide of lead and of potassium, it forming a perfectly soft and white ointment, producing but little action upon the skin, not discoloring it, and appearing to be readily absorbed when properly applied with friction. His formula is one drachm of the iodide of cadmium to one ounce of lard.—(Am. Drug. Circular, Jan. 1858.)

Pepsine.—Pepsine has been strongly recommended by various medical authorities as a useful remedy in dyspepsia, proving to be a valuable digestive agent in cases of want of appetite, of slow and painful digestion, diarrhœa, vomiting, and the weak digestion which exists at the commencement of convalescence from serious fever, and in the course of most chronic diseases.

—(Mont. Med. Chronicle, Jan. 1858; from Illustrated Inventor.)

Aromatic Syr. Rhubarb.—Dr. R. H. Stabler, pharmaceutist, of Alexandria, states that in preparing aromatic syrup of rhubarb he has obtained a more elegant preparation by modifying the process of the Pharmacopœia in the following manner: displace the aromatics separately, with a portion of the dilute alcohol, until four ounces of the tincture are obtained; set this tincture aside, and exhaust the rhubarb with the remainder of menstruum; then by means of a water bath evaporate this liquor to twelve fluid ounces; to this add the aromatic tincture previously prepared, and three pints of water, filter through paper, and add seven and a half pounds of sugar; dissolve with a gentle heat. It should measure seven parts when done.

MATERIA MEDICA.

Apocynum androsæmifolium.—Dr. Lannon, of Ohio, recommends the employment of the Apocynum androsæmifolium, or *dogsbane*, in dyspepsia and kindred diseases. It has been heretofore employed but little, those authors who have noticed it at all, assigning to it emetic and tonic powers. Dr. L. also states that it possesses laxative powers when administered in small doses, acting in larger ones promptly as a cathartic. He recommends the freshly dried root employed in decoction or infusion.

Potassio-Lactate of Iron.—Behrend (London Lancet, 1857) has successfully employed the potassio-lactate of iron in treatment of chancre.

Belladonna in arresting the secretion of Milk.—Dr. Connally, of Georgia, has employed successfully belladonna in arresting the secretion of milk, in the form of a watery solution of the extract applied to the areola.

Tannate of Zinc.—Tannate of zinc has been recommended in catarrhal affection of the eyes, employed in the form of solution, 30 grains to six fluid ounces of water and one half fluid ounce of mucilage.—(Rev. Med.)

Iodate of Potassa.—The iodate of potassa has been substituted with much success for chlorate of potassa in the treatment of various affections of the buccal mucous membrane. Several French physi-

Quinium.—MM. Delondre and A. Lebarraque have proposed a formula for a compound extract of cinchona, called quinium, and which has received the approval of the Academy of Medicine of Paris. They were led to this by the high price of quinia and its salts for a few years back having driven physicians to use the powdered bark of all kinds of cinchona instead. The quinium is simply an extract, (hydro-alcoholic,) which contains quinia and cinchonia in the proportion of two parts of the former to one of the latter; this proportion is obtained by using barks, the percentage of alkaloids in which is previously known.—(Bulletin Général de Thérapeutique and Brit. and For. Medico-Chir. Review, July, 1858.)

New method of preparing Phosphate of Lime of Bones.—M. Dannecy, of Bordeaux, on the ground of the advantage which exists in the administration of phosphate of lime in the molecular state, which is best adapted for its incorporation into the living organs, proposes the following preparation of this salt: Beef bones, washed and powdered, common water, and pure carbonate of potash are boiled together for an hour, when a perfectly homogeneous substance is formed; this substance is thrown upon a paper filter and the alkaline liquid flows off, the mass is then washed at several intervals with hot water; it is then dried and passed through a silk sieve, when a powder of excessive tenacity is obtained, soft to the touch, and equal in mobility to lycopodium. This powder contains all the natural elements of bones, but without the gelatin which holds them together; the disaggregation attains its utmost limit, and is truly molecular. The phosphate of lime of bones thus prepared is easily kept in suspension, in potions, and in cod liver oil, and it is easily moulded into various pharmaceutical forms, as pastiles, pills, etc. —(Ibid.)

Artificial Rose-water.—Rudolph Wagner states that the products of the spontaneous decomposition of salicylate of potash are characterized by a strong odor of roses. The salt is quickly obtained by decomposing salicylate of methylene (essence of gaultheria,) by caustic potassa; crystals of salicylate of potassa are precipitated, and the supernatant solution has a strong odor of roses, and by distillation affords a rose-water of fine quality.

operative. Among the most recent and valuable applications of steam in this condition, are the decomposition of oils and fats for the manufacture of glycerin, and the solution of the silica of quartz rocks in the manufacture of soluble glass, elsewhere noticed in this report.

Mercurial Ointment.—M. Coldefür, a chemist of Geneva, describes a new method of making mercurial ointment, discovered by him accidentally during the progress of some investigations upon ozone. It seems that tallow becomes ozonized in the presence of an atmosphere of that gas, and when in that condition, by simply mechanical action, rapidly absorbs mercury. The process for preparing the ointment is as follows: put into a large porcelain capsule sixteen ounces of lard, perforated with holes, so as to increase the extent of surface, and place half an ounce of phosphorus in a vessel suspended on a thread above the lard; cover the whole with a glass receiver, and at the end of a fortnight ozonization is complete. This lard so prepared is introduced into a wide-mouthed bottle, and melted on a sand bath at a temperature of 194° F. Four ounces of mercury are now gently heated and rapidly poured into the lard; the vessel is then briskly agitated for some minutes, and the operation is terminated by quickly plunging the vessel in cold water.—(N. O. Med. and Surg. Journ., May, 1858.)

New sophistication of Quinine.—Sulphate of aricine is stated in the German Journals to be extensively employed in Europe in the adulteration of sulphate of quinine. The falsification is shown when the etherial solution is evaporated and tested with nitric acid.

James' Powder.—E. S. Wayne has investigated the asserted difference existing between the patented James' powder as manufactured in England, and that directed in our works on Pharmacy, as a substitute; and reviewing the process of Dr. James, concludes that there is little or no resemblance between them, the usual preparation being antimoniate of the teroxide of antimony, while the imported article is a mixture of neutral antimoniate of potassa with phosphate of lime in equal proportions.—(Cin. Lancet and Observer, April, 1858.)

ly destroy them, and prevent their reappearance.—(Am. Journ. Pharm., June, 1858.)

Fluid Extract Buchu.—J. Henry Harte adds one more to the several formulæ now published for making a concentrated fluid extract of buchu, in the Am. Journ. Pharm., June, 1858. The peculiarity of his process consists in the addition of carbonate of potash near the end of the process for the purpose of dissolving the oleo-resinous matter thrown down during the evaporation.

Valerianate of Ammonia.—Frederick Stearns (Peninsular and Independent Medical Journal, April, 1858) gives a process for preparing crystallized valerianate of ammonia, consisting of supersaturating, carefully dried monohydrated valerianic acid with carbonate of ammonia.

Glycerole of Lactucarium.—Frederick Stearns, in same Journal for June, 1858, gives a formula for a solution of the active matter of lactucarium in glycerine, intended as a substitute for less agreeable and less active preparations of the same drug.

Compound Syrup of Yellow Dock and Sarsaparilla.—Frederick Stearns, in the same Journal, for August, proposes a formula for a compound syrup of yellow dock and sarsaparilla, based upon the process of the Pharmacopœia for Syr. Sarsap. Comp.

Fluid Extracts.—Henry Thayer and F. Stearns point out, in the Peninsular and Medical Independent Journal, for August and September, 1858, the points which it is necessary to observe, in their opinion, in perfecting a complete series of these new and important preparations.

"*Stame.*"—Edward Parrish, in the May number of the Am. Druggists' Circular, notices the modern application of "stame," (highly heated steam,) for various purposes in its application to Pharmacy. Under circumstances of intense heat and high pressure, steam seems to acquire new properties: it is capable of decomposing substances, which, by the use of ordinary chemical agencies, are wholly intractable, and itself becomes decomposable by influences, which, at a lower temperature, would be in-

incidentally, that he has always succeeded in purifying spiritous liquors, and freeing them from their essential oils, by using caustic potassa with recently calcined wood-charcoal.—(Am. Journ. Pharm., May, 1858.)

Method of Preparing Castor Oil.—M. Pavesi (Repertoire de Pharmacie, Sept., 1857) gives the following method for purifying castor oil: Take 1000 parts of the oil to be treated, 25 parts of purified bone black, 10 parts of calcined magnesia. Mix these carefully in a convenient vessel of glass or tinned iron, and let it stand during three days, with occasional agitation, and filter through paper or felt. Thus obtained, the oil is less viscid, limpid, nearly colorless, of a sweet taste, inodorous, very soluble in alcohol, and bears an intense cold.—(Am. Journ. Pharm., May, 1858.)

Citrate of Strychnia and Iron.—Prof. Procter suggests a formula for this salt, which has been employed in the English hospitals, for dyspepsia of an atonic character, as a powerful emmenagogue, etc.—(Am. Journ. Pharm., May, 1858.)

Solvent powers of Simple Syrup.—Dr. J. Rowland Hill gives, in an interesting paper, the specific solvent powers of sugar in solution, and describes its value as a menstruum, in which to exhibit certain medicinal agents.—(Amer. Journ. Pharm., June, 1858.)

Podophyllin.—John W. Cadbury confirms from experiment, the fact, asserted by the so-called eclectics, that the active and medicinal properties of the Podophyllum peltatum reside in its resin.—(Am. Journ. Pharm., June, 1858.)

Dilute Acetic Acid.—John M. Maisch, in a communication to the Am. Journ. Pharm., June, 1858, upon diluted acetic acid, states that acetic acid of the specific gravity of 1·046 should be employed instead of 1·041 of the U. S. P., in order that the dilute acid shall be of the strength ordered in the same work.

Ether in preserving Drugs.—Mr. Maisch recommends that ether be employed to kill the mites, the larvæ and the bugs, which infest and injure drugs, by enclosing the drug affected with a little ether in a close vessel; this he states will effectual-

Soap Liniment.—A. P. Sharp recommends the oleine soap of commerce in place of the officinal one in the preparation of soap liniment, on account of its containing no margarin, and thus enabling the liniment to stand a lower temperature without congelation.—(Ibid.)

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solution of sugar with the hydrated alumina, and subsequent straining through cloth, instead of, as now, its slow percolation through the former substance.

Deodorizing Gases.—John Stenhouse (Lond. Pharm. Journ., Feb., 1858) proposes to deodorize carbonic acid gas obtained from marble dust or whiting, and which may possess a disagreeable odor, by passing it through a short column of coarsely powdered charcoal, or a charcoal air filter. He takes a tube, either of glass or tin plate, about an inch and one quarter in diameter and about eight to ten inches in length; this is filled by bits of wood charcoal about the size of peas or beans; the charcoal is packed loosely into the tube so as not to prevent the ready passage of the gas. When large amounts of gas are to be purified, the apparatus must be larger, the above being designed for laboratory use. This may form a valuable hint to the manufacturer of mineral waters, as Mr. Stenhouse states that he obtained perfectly inodorous carbonic acid from both chalk and impure limestones containing much bituminous matter.

For purifying hydrogen it is equally serviceable.

Tests for discriminating the Cinchona Alkaloids.—Dr. W. Bird Herapath, (Proceedings of the Royal Society, and London Pharmaceutical Journal, March, 1858,) has examined critically the ordinary methods for discriminating the cinchona alkaloids, with a view of determining their relative value, and in another paper gives the optical and chemical characteristics of the iodo-sulphates of the cinchona alkaloids, together with the chemical analyses of some of the salts.

Fullers' Earth, a substitute for fat in Ointments.—Jas. J. T. W. Smith, in the London Pharm. Jour. for March, 1858, proposes the use of a mixture of glycerin and fullers' earth as a substitute for lard in some ointments. These are mixed to the consistence of the ordinary fatty excipients. He thinks that when an ointment is wanted which will readily wash from a wound without the use of soap, or anything save water, of good consistency, not variable with change of temperature, easily miscible with substances soluble in water, and free from liability of oxidation; that the mixture he proposes is what is best adapted to insure these desired results.

iodide of mercury, in capsules, as this form overcomes the disgust of many persons to the oil in the ordinary way.

Glycerin and Starch.—G. F. Schacht, in a communication to the Pharmaceutical Society of London, proposes a mixture of starch powder and glycerin, under the title of "Plasma," as a base or excipient in the preparation of ointments, substituting therein the plasma for ordinary fats and oils.

The proportions are seventy grains of starch to one fluid ounce of glycerin; they are mixed cold, and then gradually subjected to a heat of 240° F.

With some slight modification in one or two instances, most of the ointments and cerates of the standards can be prepared with this. It is incompatible with iodine.—(Am. Drug. Cir. from London Pharm. Jour.)

Process of Percolation.—Dr. E. R. Squibb (Amer. Journ. Pharm., March, 1858,) gives some practical suggestions in regard to the displacement process, giving views in the construction of such apparati, on a large scale, of value to the manufacturing pharmaceutist.

Syrup of Iodo-Hydrargyrate of Potassium and Iron.—Joseph E. Young (Am. Jour. Pharm, March, 1858) proposes a formula for comp. syr. iodo-hydrargyrate of potassium and iron, stating it to be an elegant mode of administering the iodide in combination in secondary syphilis combined with scrofula.

Acetic Syrups.—Wm. Hodgson (Am. Jour. Pharm., March, 1858) proposes the preparation of the syrups of ipecacuanha, seneka, and squill and seneka, also of fruit syrups used in mineral waters, with a portion of acetic acid, for the purpose of preserving them from change, and proposes "Acetic Syrups" as their designation.

Alumina as a decolorizer.—M. Ch. Mené has proved by experiment that hydrated alumina possesses the power of decolorizing liquids containing certain vegetable coloring matters, forming with such substances *lakes*, which are precipitated, leaving the liquor colorless. It is proposed to substitute the use of animal charcoal in refining sugar with this decolorizer, whereby the operation would be reduced to simply heating the

fying liquids in the state of vapor by washing in a manner similar to that in which fixed gases are washed and purified. Accompanying his paper are drawings of an apparatus for the purification and concentration of alcohol upon a large scale. By means of this apparatus absolute alcohol can be readily procured, in large quantities, and at but a nominal expense over that usually found in commerce.

Displacement—Jno. M. Maisch, in some remarks upon the displacement process, (in the Am. Jour. Pharm., January, 1858,) proposes methods by which tincture of opium and similar substances, may be readily prepared by displacement.

Syr. Phosphates.—Edward Parrish, in the Am. Jour. Pharm., November, 1857, and J. G. Richardson in January, 1858, and Scheffer in May number, 1858, of same journal, have given methods of preparing a compound syrup of the phosphates of iron, soda, potassa and lime. This preparation was first introduced by Prof. Jackson of the University of Penna., and has acquired considerable reputation in those chronic diseases accompanied by a waste of the elementary matter of the system.

Percolators.—A compound percolator is described in the Am. Jour. Phar., vol. xxx. p. 81, (in an extract from the San Francisco Bulletin, the invention of Mr. J. K. Basford, of that city,) consisting of a double displacement cylinder with an apparatus attached to the upper part, in which steam is generated and forced downwards through the material to be exhausted.

Caustic of Sulph. Acid and Sulph. Zinc.—Mr. Henry Thompson, in the Lancet, January, 1858, proposes a pasty mixture of dried sulphate of zinc and sulphuric acid, as a caustic, the effect of the sulphate being to preserve the acid in its concentrated state, preventing its spreading, and increasing its caustic force; the surrounding part must be protected by thick layers of some hard ointment, which also serves to keep the caustic in place.

Cod Liver Oil Capsules.—Mr. Wells, in the Med. Times and Gaz., December, 1858, recommends the administration of cod liver oil, pure, or combined with quinia, iodide of iron or bin-

Tannate of Iron.—W. F. Fenlon (in the Boston Med. World) proposes a ready method of preparing tannate of iron, which consists of triturating together one part of tannic acid with three parts precipitated sesquioxide of iron while dry, then moistening the mixture slightly, drying it, and moistening it again, triturating, and finally thinly spreading it upon glass plates to dry at a temperature not over 160° F. He recommends its use as a tonic, also as a collutory and gargarism in puerperal thrush and quinsey, in typhoid fever, dysentery, chronic diarrhœa, etc.

Superphosphate of Iron.—Mr. A. Cushman (Amer. Med. Gaz. Jan. 1857) calls attention to superphosphate of iron, stating that it is largely employed in England in chronic dyspepsia, consumption, and some disorders of the mental organization consequent upon waste of tissue, etc., in various diseases. His method of preparing it is by dissolving to saturation freshly precipitated phosphate of iron in a solution of meta-phosphoric acid, and adding sugar to form a syrup, so that it shall contain 5 grains of the phosphate in each fluid ounce.

Hydrated Sesquioxide of Iron.—J. W. Pittinas, M. D., in the Phil. Med. and Surg. Jour. Dec. 1857, states that hydrated sesquioxide of iron may be most conveniently prepared from the ammonio-ferric alum, now so much employed as an astringent. A concentrated solution of this alum in water is precipitated by ammonia in the usual manner, and washed upon a piece of flannel, the whole process occupying but a little time.

Gelatinized Cod Liver Oil.—Some formula for gelatinizing cod liver oil are published in the Am. Journ. Med. Sciences for January, 1858, being taken from the Bull. Gen. de Thérap., in which gelatin, Irish and Iceland moss, and spermaceti are employed.

Sub Carb. Bismuth.—Dr. R. Battey gives a new method of preparing this salt in the Southern Med. Jour. for Jan., 1858, by which the repeated fusion of the metal with nitrate of potassa is avoided.

Purification of Liquids in state of Vapor.—Dr. E. R. Squibb gives, in the Am. Jour. Pharm., Jan., 1858, a process for puri-

be readily performed by pharmaceutists. As the quantity of morphia in the opiums of commerce may vary from 0 to 14 per cent., it becomes a matter of importance to know this amount before making use of opium for medicinal purposes.—(Chem. Gaz. Aug. 15, 1857.)

Gelatinized Chloroform.—Chloroform, gelatinized by admixture of an equal weight of albumen of egg, has been highly recommended as a practicable form in which to use this substance externally; the impermeable mass of albumen preventing the too rapid escape of its volatile portion, and retaining it in contact with living tissue a sufficient time for it to develop its anæsthetic property.

Disguising Cod-liver Oil.—Common salt is suggested as an addition to cod-liver oil, for the purpose of masking its taste, as well as to render it more readily digestible. Essence of anise further masks the oil.

Peruvian Bark.—T. R. Spence calls the attention of Pharmaceutists, to the necessity of improvement in the various fluid preparations of Peruvian bark, and suggests that, to be perfect, they ought to contain the active principles of the bark in the same state of combination in which they exist therein naturally. He also proposes formulæ for tincture, fluid extract, and elixir of cinchona.—(Medical Independent, 1857.)

Test for Oil of Bitter Almonds.—J. M. Maisch proposes caustic potassa as a test for the presence of nitro-benzole in oil of bitter almonds, it forming with pure oil, benzoate of potassa and benz-alcohol, while if adulterated with nitro-benzole a dark brown crystalline mass is formed.—(Am. Jour. Phar. 1857.)

Solubility of Iron in Cod-liver Oil.—Mr. Vezu, in the Rep. de Pharm., states that the metallic iron reduced by hydrogen dissolves in cold cod liver oil, in olive and in castor oil, without changing the color of them, in oil of sweet almonds giving it a mahogany tint, and that the gelatinous protoxide of iron dissolves in these menstrua with even greater facility, its humidity promoting the solution. Ether dissolves these oils as it does when they are in the natural condition.—(Am. Jour. Phar. 1857.)

Davy's Cement.—Edmund Davy suggests a cement formed by melting two parts by weight of common pitch, and adding one part by weight of gutta percha. He states that this cement is useful in a warm and fluid state, and also when cold; it adheres with great tenacity to metals, wood, stone, glass, porcelain, bone, leather, paper, silk etc. The properties of this cement suggest its employment for many purposes in the laboratory of the pharmaceutist.

Tinct. Verat. Viride.—The Baltimore College of Pharmacy has adopted the following formula for Tincture of Veratrum Viridis.

Take of Root of Veratrum Viride	eight ounces,
Alcohol 80 per cent.	one pint,

Prepare a tincture either by maceration or displacement.—(Am. Jour. Phar. 1857.)

Improvement in Syr. Rhei Arom.—Mr. W. S. Thompson, of Baltimore, suggests the following method of preparing aromatic syrup of rhubarb, as an improvement upon the process usually followed:

Reduce the ingredients to a coarse powder separately, make a tincture of the aromatics with a small proportion of the diluted alcohol, mix the drugs left after the displacement of the aromatic portion with the rhubarb and a sufficient quantity of washed sand, and displace with the remainder of the diluted alcohol; proceed to finish the syrup in the usual manner, and when the process is nearly completed, add the aromatic tincture, previously reduced by evaporation over a water bath to one half.

Method of locking stoppers in bottles.—George H. Stevens has patented a method of locking and unlocking glass-stoppered bottles, which consists of fixing the stoppers by means of a bolt, or key, passing through a metal tube fixed in a hole drilled through the side of the neck of the bottle.—(Am. Drug. Circular, 1857.)

Process for testing percentage of Morphia in Opium.—M. Fordas proposes in the Comptes Rendus, June 1857, a process for ascertaining the percentage of morphia in opium, which may

tain the cinchona alkaloids. He gives the manner for testing the bark, and states that the presence of some substances, caustic alkalies, lime, nitric and chromic acids, etc., prevent the production of the red substance; and that by the destructive distillation of the constituents of the bark, quinia, cinchonia, etc., severally and collectively, they did not furnish the red substance.

His experiments led him to infer that the production of this red substance, when the cinchona bases are heated with the organic acids, is a reaction peculiar to them.

Chemistry of Bread-making.—W. Odling, in a communication to the Society of Arts, and published in the London Pharm. Journ., May, 1858, treats at length upon the phenomena of pomification, and upon the changes which starch and gluten undergo, in the growth of wheat and in the production of flour. The paper is full of interest and instruction.

Constituents of the deposit from Tincture of Rhubarb.—Warren de la Rue has ascertained, in investigating the nature of the deposit from tincture of rhubarb, that it chiefly consists of four organic alkaloids, viz.: *Chrysophane, Aporetine, Erythroretin, Phœoretin.* In his paper he treats at length upon the manner of separating these substances, and upon their atomic constitution, reaction, etc.—(London Pharm. Journ., May, 1858.)

Creatine.—Hr. Stædeler (Journ. für prakt. Chemie, lxxii, 256,) gives a simple method of determining the presence and obtaining this substance.—(London Pharm. Journal, June, 1858.)

Compounds of Mannite with Earthy Oxides.—Joseph Abaldini (Chem. Gaz., Feb. 1st, 1858,) has investigated the combination of mannite with lime, baryta and strontia, and has ascertained that it possesses an affinity for those substances analogous to that presented by the same bodies towards sugar, glycerin, and other substances of the same order.

Valerianate of Atropine.—M. Miette has given a method for the preparation of valerianate of atropine; it is uncrystallizable, of a dense syrupy consistence, and bright yellow color, changing

C_{16} H_{16}, also yield similar compounds.—(Lond. Pharm. Journal, January, 1858.)

Formula of Oxalic Acid.—Wurtz, (Comptes Rendus, xliv. 1306,) in his researches to establish the true equivalent for oxalic acid, considers this acid to be a derivation of glycol, and of ethylene, in the same way that acetic is a derivation of alcohol and ethyl; consequently, oxalic acid must contain four atoms of carbon, like acetic acid, and is to be regarded as a bibasic acid. The formula of Wurtz for oxalic acid is thus :—C_4 H_2 O_8.

Rottlerine.—Dr. Anderson, of Glasgow, has made the Rottlera Tinctoria a subject of special investigation, and has analyzed the powder obtained from the capsules and termed Kamala, and found it to contain a yellow crystalline substance, of a fine satin lustre, which he has termed *Rottlerine;* it is insoluble in water, sparingly soluble in cold alcohol, more so in boiling; its formula (not confirmed) is stated to be C_{22} H_{10} O_6.

A paper written by Mr. Daniel Hanbury gives a full history of this new anthelmintic.—(Lond. Pharm. Journal, Feb., 1858.)

Mycose, the sugar of Ergotized Rye.—Prof. Mitscherlich has recently examined this sugar, and describes it as crystallizable, readily soluble in water, almost insoluble in alcohol, insoluble in ether; its reaction with nitric acid, alkalies, and sulphate of copper are similar to those of cane sugar; its formula C_{12} H_{11} O_{11} + 2HO. The name mycose is given this sugar because it is obtained from a fungus (μύκης), and it belongs to the same group as cellulose, glycose and dulcose. It is obtained best by precipitating a watery extract of ergot with a solution of basic acetate of lead, separating the excess of lead by sulphuretted hydrogen, and evaporating to a syrupy consistence; by repeated crystallization from water and washing with alcohol, the sugar is obtained pure.—(Lond. Pharm. Journal, May, 1858, from Bericht der Akad. der Wissens. zu Berlin, 1857.)

Test for Cinchona Bark and its Alkaloids.—Hr. Grahe, (Chemisches Central Blatt, 1858,) has ascertained that when true cinchona bark is submitted to dry distillation, it gives a product of a bright carmine color; this product is characteristic of these barks, and not furnished by any other which do not con-

very fluid, of a faint golden yellow color, agreeable odor, boils at 362° F.

Alumina in analysis of Plants.—Rochleder (Am. Jour. of Science and Arts, January, 1858,) has pointed out the superiority of hydrated alumina over hydrated oxide of lead, in separating the proximate constituents of plants; the coloring matter, and some other substances in certain plants, being precipitated by it, leaving the purification and separation of the active principles in such classes of plants as are affected by it, comparatively easy. This application of alumina, it is believed, will greatly tend to lessen the cost of many substances which heretofore have not come into use on account of their expense.

Piperic Acid.—A new organic acid, termed piperic acid, is described by Prof. Von Babo and E. Keller, in the Journ. für Prakt. Chemie, vol. lxxii., the potash salt of which is obtained by heating piperine with an alcoholic solution of potash, there resulting from the action, piperidine, and piperate of potassa. The potassa salt furnishes the acid, when decomposed, by means of sulphuric acid; on crystallization from alcohol it forms needles of a peculiar yellow color. Its formula is C^{50} H^{22} O^{16}.

Phloretic Acid.—H. Hlasiwetz describes phloretic acid as a product of the decomposition of phloridzin by an alkali; its formula C^{18} H^{10} O^{5}, HO. The author also describes its alkaline and metallic salts.—(Chem. Gaz., Jan. 1, 1858.)

Test for Morphia.—Ludwig Kieffer, noticing that morphia reduces ferrid-cyanide of potassium, in solution, to ferro-cyanide, proposes a process for ascertaining the percentage of morphia in opium, based upon that reaction.—(Chem. Gaz. Feb. 1, 1858.)

Direct combination of Hydro-carbons with Hydracids.—M. Berthelot, (Comptes Rendus, xliv. 1350,) has succeeded in effecting the combination of the hydro-carbons with hydracids. Propylene heated for seventy hours with aqueous hydrochloric acid, to 100° C. in a sealed tube, yields C_6 H_7 Cl, and the combination takes place even at ordinary temperatures, but more slowly. A similar combination takes place with hydriodic or hydrobromic acid, and in this way the chloride, bromide, or iodide of propyle is produced. Amylene C_{10} H_{10} and caprylene

sugar in urine, by means of a new instrument termed a *Glucometer.* It is constructed upon the fact that glucose, when boiled with a solution of carbonate of potassa, gives rise to an amber color, and that the tint is in proportion to the amount of sugar. —(Am. Jour Med. Sciences, January, 1858, from Lond. Lancet, Oct. 16, 1858.)

Tests for Sugar in Urine.—Dr. A. Becquerel has given a method by which the test for sugar in diabetic urine, by means of the cupro-potass. sol. of Barreswil, and of caustic potassa itself, may be made much more certain and delicate.—(Am. Jour. Med. Sciences, January, 1858, from L'Union Médicale.)

Val. Ammon.—MM. Lobouser and Fontaine propose a process by which valerianate of ammonia may be obtained of definite composition, in pure snow-white crystals. It consists of passing anhydrous ammoniacal gas into a receiver, in which is placed, in flat capsules, thin layers of monohydrated valerianic acid.—(Am. Jour. Med. Sciences, January, 1858, from Bul. Gen. de Therap.)

Potato.—J. W. Rogers, in a paper read before the Section of Chem. Science of the Brit. Association, upon the chemical properties of the potato, stated that the dry matter of the potato was, in reality, equal in nutritive value to the dry matter of wheat, whilst the quantum of food produced from a given quantity of land was nearly four times that produced from wheat, and gives the following results of analysis :—

	Starch.	Gluten.	Oil.
Components of the potato per cwt.	84.077 lbs.	14.818 lbs.	1.104 lbs.
" " wheat "	78.199	17.536	4.265

And the following as the quantum of food from an acre of land :—

	Starch.	Gluten	Oil.
Dry matter of potato,	3.427 lbs.	604 lbs.	45 lbs.
" " " wheat,	825	185	45

(Am. Jour. Med. Sciences, January, 1858, from Brit. Med. Jour.)

Ess. Oil of China Orange.—S. de Luca (Comptes Rendus, 1857) has made a chemical investigation of the ess. oil of the rind of the China orange; (*Citris bigaradia sinensis ;*) it is a hydro-carbon, formula C^{20} H^{16}; spec. grav. 0.852; it is limpid,

Ilexanthine and Ilicic Acid.—F. Moldenhauer has obtained from the leaves of the Ilex aquifolium (holly) a crystalline principle which he has named *Ilexanthine;* he states it to be a non-nitrogenous compound, of a straw-yellow color, separating in microscopic acicular crystals; heated to 419° F. it decomposes without sublimation, insoluble in ether, but soluble in alcohol; cold water takes up a little of it, hot water dissolves it quite freely, depositing the coloring matter upon cooling in a crystalline form; its formula is C_{17} H_{11} O_{11}. The same investigator obtained a peculiar organic acid from the same plant, which he has termed *Ilicic Acid;* it is in the form of a colorless syrupy liquid, similar to malic acid. (Chem. Gaz., Aug. 1857.) Dr. Schneck has since (Oct. 6, 1857, Chem. Gaz.) found *Ilexanthine* in the leaves of the *Polygonum fagopyrum*, or common buckwheat.

Sarcine.—A. Strecker has obtained a crystalline body from the syrupy mother liquor, which is produced in the preparation of *creatine*, by the process of Liebig; it has weak basic properties, and he has given it the provisional name of *Sarcine.* It is a white, indistinctly crystalline body, formula C_{10} H_4 N_4 O_2, soluble in cold and hot water, requiring 900 parts of boiling alcohol for its solution; it forms compounds with the stronger acids, and with the bases; the quantity of *sarcine* contained in beef is stated at 0.22 part in 1,000 parts of flesh.—(Chem. Gaz., Sept. 1, 1857.)

Huanokine.—To the list of principles before found in the cinchonas, a new one has been added, the discovery of A. Erdman, which he has named *Huanokine*; C_{20} H_{12} NO; it is tasteless, crystallizes in small colorless prisms, has a slight alkaline reaction, is insoluble in water, soluble in alcohol and ether, forms salts with the acids; according to observations, it possesses high febrifuge action. It is found in a variety of cinchona bark collected in the forests of Huanuco, north of Lima; this variety is probably the Cinchona nitida (Quinologie, Paris, 1854, p. 27.) One pound of the bark yields one drachm of the alkaloid.

Sugar in Urine.—Dr. Garrod has brought before the Med. Soc. of London a method of determining the amount of diabetic

of the manufacture of green and blue ultramarine.—(Chemical Gazette, Jan. 1st, 1858.)

Aluminium.—Mr. Petitjean has effected an improvement in the production of aluminium, which promises still further to reduce the cost of this valuable metal. His invention consists in transforming so much of the aluminium as is present in the substance with which it is found naturally combined into one or more sulphurets, and then removing the sulphur therefrom by the aid of carbon, or a hydro-carbon, or of a suitable metal or metals mixed therewith, and exposed in a crucible to a high temperature, after which the aluminium in a metallic state will be deposited in the crucible. The process is equally applicable to the production of magnesium.—(Journal of Franklin Institute, July, 1858, from Mechanics' Magazine, 1858.)

Solvent Process of Ammonio-Oxide of Copper upon Vegetable Fibre.—Dr. Ed. Schweizer (Jour. fur Prakt. Chemie) calls attention to the singular properties of ammonio-oxide of copper as a solvent for vegetable fibre, cotton, paper, linen, silk, wool, hair, etc.—(Chem. Gaz., Feb. 5, 1858.)

ORGANIC CHEMISTRY.

Scammony.—Dr. Franz Keller (Liebig's Annalen) having recently made the composition of commercial scammony a study, concludes from his experiments upon the purified resin that it contains a hydrate of carbon $C^{12} H^{10} O^{10}$ (dextrine?) conjugated with several acids. It it a glucoside, of the formula

$$C^{76} H^{67} O^{35} = C^{76} H^{64} O^{32} + 3HO.$$

When boiled with caustic alkalies there is produced from the glucoside an acid, scammonic acid, which with an equal number of equivalents of carbon is distinguished from the anhydrous resin by an addition of 4 equivs. of hydrogen, and 11 of oxygen, and consequently by 4 of water and 7 of oxygen. Four of these equivs. of water are replaceable by metallic oxides. By the action of dilute mineral acids upon the glucoside acid, or the alkaline solution of the resin, the acid splits up into a new acid, scammonolic acid, $C^{36} H^{36} O^{7}$, and sugar. A volatile acid is also formed, which was recognised as butyric acid.—(Am. Journal Pharmacy, May, 1858.)

alcoholic one in the manufacture of beer, by soaking the casks, fermenting vats, barrels, and coolers with a solution of the acid.

Soluble Glass.—A solution of soluble silicate of soda, under the name of vitrine in this country, or water glass and mineral gum in England, is rapidly coming into use for various purposes in the arts and in manufactures. It is prepared by various processes, but consists of an artificially prepared silicate of soda, dissolved by means of highly heated steam, (any sand or rock containing silica may be employed); the solution is concentrated to any desired strength, and is furnished by manufacturers with directions for diluting it to the density that any particular purpose to which it may be applied will require. It is used

As a size for calico, in lieu of British gum, being better and cheaper.

For soap making, it being itself detergent and preventing waste in soap by evaporation.

For saturating timber, cloth, scenery, dresses and other inflammable materials being itself incombustible, and protecting organic matters thus saturated from the action of fire.

In contact with lime, it consolidates, and is partially converted into silicate of lime; hence it is employed in protecting the soft varieties of limestone used in building, from the action of air, hardening them; in Berlin, in the process called "Stereochrome," a revival of fresco painting on the walls of buildings, the design being protected by the application.

It is used as a cement in producing artificial stone.

It forms a valuable cement for glass and china.

In Pharmacy it is valuable as a paste for attaching labels to vials or bottles, and as a varnish to protect them from the action of air and moisture.

It is probable that many other uses valuable in Pharmacy will be developed from this new and important product. We understand that Messrs. Zimmerman & Co., of Cincinnati, Ohio, are largely engaged in the manufacture of this solution.

Manufacture of Ultramarine.—J. G. Gentelo (Dingler's Journal, cxlii. p. 351) has given an interesting account in detail

of iodide of barium, which upon recrystallization are chemically pure.

Chlorate of Potassa as a test for Manganese.—Prof. Böttger suggests fused chlorate of potassa as an excellent reagent for manganese, detecting the smallest trace of this metal in organic and inorganic bodies.—(Am. Jour. Phar., Jan., 1858, from Buchner's Neues Repert.)

Antimoniate of Potassa.—A new process for preparing antimoniate of potassa is given in Neues Lehrbuch für Pharmacie. (Am. Jour. Phar., Jan., 1858) which consists of decomposing golden sulphuret of antimony with potash ley, and boiling the solution with precipitated hydrated oxide of copper.

Carbonate of Potassa from Felspar.—Dr. E. Mayer describes (Chem. Gaz., Jan. 15th, 1858) a method of procuring potash or its carbonate from felspar and similar minerals, which consist of decomposing the mineral by calcination with lime, and then heating it with water under a pressure of eight atmospheres. The process is adapted to the manufacture of carbonate of potassa upon a large scale, and at less cost, it furnishing a product nearly chemically pure, and also secondary products of value.

Refining of Sugar by Sulphurous Acid.—Professor Calvert has overcome the difficulty and danger attending the preparation of sulphurous acid upon the larger scale for the purpose of sugar refining by means which he has made public, and by which he readily prepares thousands of gallons per day of a saturated solution of the acid. He states that for the process of sugar refining it is far superior to the sulphite of lime used, because, by its volatility it does not remain in the syrup or molasses, and does not give them as the sulphite does, a disagreeable taste. He states, moreover, that it possesses two distinct advantages for the sugar refiner: 1st, that it stops the fermentation of his hot liquors as they come out of the filters; and 2d, when properly applied, it tends to prevent the re-coloration of the liquors, during their concentration in the vacuum pans. He also proposes the use of this acid for preventing the acetic fermentation succeeding the

REPORTS OF COMMITTEES.

REPORT ON THE PROGRESS OF PHARMACY.

GENTLEMEN,—Your Committee, appointed at our last meeting in Philadelphia, to report upon the progress made in Pharmacy during the year which has intervened, beg leave to submit the following record of the recent discoveries and improvements made in Pharmacy and its accessory branches of science and art.

Following out the plan adopted by the Committee for 1856 and 1857, your Committee have endeavored to condense, as far as practicable, each item in the Report, in order that it, when complete, should not occupy too much space in the transactions of the Association. Yet to render a report to the Association most valuable to the profession, your Committee felt that it should, in place of a record only, be a *critical* report as well, upon all new improvements and processes proposed and offered to the profession through the periodical press, and that each item consist of a full detail of each process or improvement brought forward. We hope these suggestions will have due consideration on the part of the next Committee appointed.

INORGANIC CHEMISTRY.

Iodide of Barium.—C. R. C. Tichthorne, in the London Chemist for September, 1857, gives a method of preparing iodide of barium from *witherite*, which is preferable to the method now employed, of first making hydriodic acid, and dissolving the carbonate in it, when operating with large quantities. The method consists of keeping powdered *witherite* with half its weight of filings of malleable iron at a slow red heat, for some time, in a black-lead crucible; the carbonate is dissolved, carbonic oxide being liberated, water and iodine being added, and the whole boiled together. Iodide of barium is formed with iodide of iron, which last is finally converted into the barium salt; the clear solution being evaporated, yields crystals

when this Convention adjourns, it adjourn to meet in Boston, the second Tuesday in September, 1859, at 8 o'clock, P. M.

The following resolution was offered by Mr. Stearns, and unanimously carried:

Resolved, That the thanks of the American Pharmaceutical Association are due, and are tendered to the Pharmaceutical Association of the District of Columbia, for the ample accommodations afforded us, the courtesies extended to us, and for the very agreeable manner in which we have been entertained.

On motion of Mr. Colcord the Minutes were now adopted in whole.

On motion, adjourned.

W. J. M. GORDON,
Secretary.

36. It has been found that Liquor Ferri Iodidi of the Pharmacopœia, frequently assumes a brown color, and that this color is entirely dissipated on exposure to light, or may be prevented entirely by such exposure to light when first made. (See Amer. Journ. Pharm., vol. xxvii. page 218.) *Question.*—To what is this change due, and is it, by such change, therapeutically affected?

Accepted by W. J. M. Gordon, of Cincinnati.

37. What is the correct history of the production and sources of supply of Hemlock or Canada pitch, of Balsam of Fir, and of Oil of Hemlock; and to what extent are they produced in New England and Canada?

Continued to S. P. Peck, of Bennington, Vermont.

38. What are the best vehicles for disguising the taste of Quinia and its salts, and what the most eligible excipient for forming it into pill mass?

Accepted by R. A. Payne, of Washington, D. C.

39. The Silphium laciniatum, or rosin weed of our western prairies, yields a resinous exudation, in appearance like mastic. *Question.*—What is the character of this resinous product, can it be substituted for mastic, and to what extent may it be collected as an article of commerce?

Continued to Edwin O. Gale, of Chicago, Ill.

40. It is well known that many pharmaceutical preparations deteriorate by keeping. What are the prominent instances of this change, what are the best means of preventing or moderating them, and in cases of partial deterioration of valuable medicines, unfit for dispensing, what is the best disposition to make of them to avoid loss?

Continued to Edward Parrish, of Philadelphia.

Respectfully submitted by

WILLIAM PROCTER, JR.,
FREDERICK STEARNS,
Committee.

The following resolution was offered by Mr. Lincoln, and carried.

Resolved, That the thanks of this Association are due, and are hereby presented, to the President, for the dignity and impartiality bestowed by him upon its deliberations, and to the Recording Secretary for his care and application to the increased duties of his office.

A motion was made by S. M. Colcord, and adopted, that

28. Is the activity of the bark of Cornus Florida due to a crystalline substance? Is the active principle alkaline, acid or neutral? Will it answer as a substitute for quinia? and can it be advantageously manufactured at a low price?

Continued to John M. Maisch, of Philadelphia.

29. An investigation of the relative therapeutic value of imported and indigenous medicinal plants.

Accepted by Henry A. Tilden, of New Lebanon, N. Y.

30. Can the culture of Arnica flowers be profitably introduced into the United States?

Accepted by Henry A. Tilden, of New Lebanon, N. Y.

31. Pepsin, a normal constituent of the juices of the digestive organs of the mammalia, has come into general use as a remedial agent in certain forms of disease. *Question.*—What is the best process for obtaining it, from what animals should it be taken, and what is the most eligible pharmaceutical form for its administration?

Accepted by Alexander Cushman, of New York City.

32. The subject of improved formulæ for the Fluid Extracts, in reference to their more general adoption in the next Pharmacopœia.

Accepted by William Procter, Jr., of Philada.

33. What is the extent of the culture of, and production of sugar from, the Sorghum saccharatum within the United States at present; what inference may be drawn therefrom of its value as a source of this important article; and what is the composition and saccharine percentage of the juice compared with that of sugar cane?

Continued to Robert Battey, M. D., of Rome, Georgia.

34. What is the actual state of the production of volatile oils in the United States, and more especially in Ohio, New York and New Jersey, as regards quantity, quality and locality, together with remarks on the trade in volatile oils generally?

Referred to Lewis T. Lazell, of New York City.

35. The culture of the grape has greatly increased in Missouri within the past few years. *Question.*—What varieties of grape are cultivated; what are the distinctions between the culture of grapes in this and other States; and what are the statistics in regard to the amounts of wine produced in this and former years?

Referred to Alexander Leitch, St. Louis, Missouri.

20. The history and statistics in regard to the collection and curing of Carrageen, or Irish moss, on the coast of New England, and is it produced by the same plant as the Irish drug?

Accepted by Augustus P. Melzar, of Boston.

21. The culture of Crocus sativus in this country. To what extent is it cultivated for the purpose of obtaining saffron? How does the same compare with that of foreign production, and what are the inducements and the obstacles to the culture of the saffron plant?

Accepted by Frederick L. John, of Philada.

22. Dr. Garrod, in a paper read before the College of Physicians at London, asserts that liquor potassæ destroys the medicinal power of the alkaloids of belladonna and hyoscyamus. *Question*—Is this assertion corroborated by other investigators, and if so, in what manner does the alkali act?

Accepted by R. H. Stabler, M. D., of Alexandria.

23. Statistics of the manufacture of fine chemicals, on a large scale, in England for exportation to the United States.

Accepted by Henry Haviland, of New York.

24. The drug trade of the United States; its past, present, and future.

Accepted by C. B. Guthrie, M. D., of New York.

25. It is well known that cantharidin, a neutral substance, insoluble in water, is, in its natural state, quite soluble in that fluid; so that water by decoction will wholly remove that principle from Spanish flies. This solubility is attributed to a yellow substance existing in the insect. *Question*—What is the nature of this yellow matter, and in what way does it influence the solubility of cantharidin?

Referred to John M. Maisch, of Philada.

26. It is a well known fact that the odor of Vanilla, like that of tobacco, does not exist naturally, but is developed by a fermenting or sweating process. It is also known that this odorous principle is not volatile by distillation with water like the volatile oils. *Question.*—What is the true source of the odor of Vanilla, and has it any analogy to coumarin, the odorous principle of tonqua beans?

Accepted by S. S. Garrigues, of Philadelphia.

27. What is the cause of the strong purgative power of the marc of Castor beans left after the expression of the fixed oil.

Accepted by Richard H. Stabler, M. D., of Alexandria.

11. A synopsis of the History of Pharmacy, and its progress as a science, from the earliest period to the present time.

Accepted by James O'Gallagher, St Louis, Mo.

12. The history and statistics of the production of castor oil in Porto Rico, West Indies.

Accepted by Edward L. Milhau, New York.

13. The Cocoa nut, (Theobroma cacao.) The history of its culture, products and uses in medicine and domestic economy.

Accepted by Edward Donnelly, M. D., Philada.

14. What is the best form of press and pressing box for the pharmaceutical laboratory on a moderate scale, combining great power with simplicity and easy manipulation? The answer to be accompanied by a correct drawing.

Accepted by Edward R. Squibb, M. D., of New York.

15. What is the best form and material for a still for the pharmaceutist, of from 2 to 4 gallons capacity, capable of being heated by gas or stove heat, which shall combine economy with efficiency and fitness?

Accepted by E. R. Squibb, M. D., of New York.

16. An essay on fitting up and ornamenting drug stores with reference to convenience and good taste.

Accepted by Frederick Hale, of New York.

17. Oxide of silver, when associated with certain organic matters in pill masses undergoes decomposition. *Question*—What are the conditions and substances favorable to this change, and how should it be avoided?

Accepted by Ambrose Smith, of Philada.

18. What is the most eligible process for obtaining polygalic acid from senega, in what proportion does it exist, and what are the forms of prescribing it most to be desired as a substitute for the preparations of senega?

Accepted by William Procter, Jr., of Philada.

19. The bark of Larix Europœa has recently attracted some attention in Ireland and England, as an astringent remedy to allay the chronic discharges from mucous surfaces of the alimentary and urinary organs. *Question*—Does the bark of Larix Americana possess this property, and if so, to what may it be attributed?

Referred to Henry T. Cummings, M. D., of Portland, Maine.

soluble substances, so as to mask their taste, is becoming of some importance in practical pharmacy. *Question*,—What are the best materials for this purpose; and what the best and most practical processes for effecting it, both on a large scale, and extemporaneously?

Continued to John Canavan, of New York.

4. Mustard.—What is the best formula for a permanent liquid preparation of white or black mustard seed, that may be used as a substitute for mustard plasters?

Continued to Edward Parrish, of Philada.

5. Dr. Stenhouse has investigated the volatile oil, and stearoptene of Xanthoxylum piperitum, or Japanese pepper. See Amer. Jour. Pharm Sept., 1857. *Question:* what is the true botanical source of what is called "southern prickly ash bark," and does the pungency of that bark and the bark of X. fraxineum of our Pharmacopœia, depend on the same principles as in the Japanese pepper?

Accepted by William S. Merrill, of Cincinnati.

6. What influence is exerted on the *normal* solvent power of water, officinal alcohol and ether, by admixture with each other as pharmaceutical menstrua, in regard to the solution of various vegetable principles, (like gum, sugar, starch, albumen, resins, volatile oil, etc.,) either desirable, or to be avoided in making preparations?

Accepted by Henry Thayer, of Cambridge, Mass.

7. What is the value of the phenomenon of iridescence in the essential oil of bitter almonds as a test of its purity?

Accepted by Abram S. Wiley, of Cambridge, Mass.

8. An essay on the best tests to determine the adulterations of wines and liquors.

Accepted by Geo. W. Weyman, of Pittsburgh, Pa.

9. The chrome and magnesia ores of Lancaster county, Penna., are abundant. *Question*—What are the processes of mining these ores, and what is their commercial history and manufacture?

Accepted by Charles A. Heinitsh, of Lancaster, Pa.

10. It has been shown by repeated trials, that opium, or its extract, that has been treated with ether, is much less liable to cause nausea and headache, than when in its normal state. *Question*—What principles are thus removed from opium, and upon which of them does the sickening effect depend?

Referred to Eugene L. Massot, of St. Louis, Mo.

Ext. Rosæ. The Professor's productions, by his improved process of percolation, were beautiful specimens of pharmaceutical skill.

Mr. H. Haviland, of New York, presented chemical specimens, consisting of Sulph. Morphine, Valer. of Iron, Lactate of Iron, Ammon. Cit. Iron, Citrate of Iron and Quinine, Hydrocyanic Acid, Acet. Morphine, Veratrine, pure Strychnine, Bin. Iod. Mercury and Valer. Quinine.

Mr. F. A. Reichard, of New York, sent ten specimens of Sugar-coated Granules and Dragees manufactured by Garnier, Lamaroux & Co., of Paris.

Mr. Stearns presented, on behalf of Messrs. Zimmerman & Co., Cincinnati, a sample of Silicate of Alkali, known as Vitrine or Soluble Glass.

Messrs. Tilden & Co., of New York, had on exhibition specimens of fluid and other extracts, resinoids and sugar-coated pills.

E. Donnelly, M. D., of Philadelphia, exhibited to the Association specimens of the Brazil Nut Oil, and the following preparations made from it, viz: lead plaster, glycerin, citrine ointment, oleic acid, and margaric acid, accompanied by a beautiful oil painting of the fruit, leaf and seeds of the *Bertholletia excelsa*, which yields the Brazil or cream nuts of commerce.

Samuel Harris, of Springfield, Mass., had on exhibition a compact and valuable sifting machine for druggists. The sifter is suitable for all purposes required by pharmaceutists, and the Committtee would call attention to its usefulness.

JOHN MEAKIN,
E. DONNELLY.

The Committee appointed to prepare a list of subjects for investigation the ensuing year, offered the following, which was adopted, and directed to be published in the Proceedings:

1. What are the best means of keeping the vegetable extracts, and especially those from narcotic plants, in the dispensing shop, so as to avoid, to the fullest possible extent the inspissation and alterations to which they are subject, by unavoidable exposure in dispensing?

Continued to Prof. I. J. Grahame, of Baltimore.

2. Wine of Ipecacuanha. What is the cause of its tendency to deposit a sediment—has that sediment any medical value—and can the deposition be avoided by substituting another alcoholic menstruum of the strength of wine?

Accepted by Prof. I. J. Grahame, of Baltimore.

3. The subject of coating pills with sugar, mucilage, gelatin and other

Parrish, I. J. Grahame and C. T. Carney were appointed to this duty.

The Report of the Committee of the Adulteration of Drugs was called, up and, on motion, referred to the Executive Committee to publish such parts as they may deem advisable—(See page 222.)

On motion, a committee of six members was directed to be appointed by the Chair, to consider and report next year upon the subject of Home Adulterations. Charles T. Carney, Geo. W. Weyman, A. P. Sharp, R. H. Stabler, E. R. Squibb and Alfred B. Taylor, were appointed.

On motion, it was ordered that a committee of three be appointed to have further charge of the subject of the amendment of the U. S. Law regulating the importation of drugs. The Chair appointed C. B. Guthrie, J. L. Kidwell and A. P. Sharp.

The Report on Local Unofficinal Formulæ was called up, and on motion referred to the Executive Committee for publication. (See page 229.) The Committee was discontinued.

The Executive Committee was instructed to apply for an act of incorporation for the Association, and to endeavor to obtain it as early as practicable.

The Committee to examine specimens on exhibition reported as follows, which was accepted:

"The Committee appointed upon articles on exhibition, are unable to make, on the present occasion, a very flattering report to your body, and regret to say that more members have not, as heretofore, brought specimens of their skill as chemists and pharmaceutists. It is the opinion of the Committee that one of the great advantages of being a member of this Association is the information to be obtained by examining specimens of scientific productions, and it is hoped at our next annual meeting every member will exert himself and add his mite to the exhibition.

The ethereal and other preparations presented by E. R. Squibb, of New York, were very interesting, and consisted of Chloroform, Ether, Ether Fort., Sp. Ether. Nit., Sp. Ether. Comp., Oleum Ethereum, (heavy oil,) and Light Oil of Wine, Chloropercha, impure oils from Chloroform, Ferri Pulvis, Liq. Ferri Iod., and bottles with corks protected by chloropercha.

R. H. Stabler, of Alexandria, presented well prepared specimens of Podophyllin and Jalapin.

Prof. I. J. Grahame, of Baltimore, presented specimens of Ext. Rhei, Emp. Ammon. and Hydrarg., Ext. Conii, Conf. Rosæ, Cerat. Sapon., and Fluid

had, and is having on the pharmacy and pharmaceutists of the United States, was read by William Procter, Jr., and referred to the Executive Committee for publication. (See page 466.)

A paper on the solubility of Medicinal Substances in Alcohol was read by W. S. Merrill, and referred to the Executive Committee for publication. (See page 434.)

A paper was read by Frederick Stearns, on the Peppermint Plantations of Michigan, and referred to the Executive Committee for publication. (See page 449.)

Then, on motion, adjourned to 3½ o'clock P. M.

Fourth day—Afternoon Session.

The meeting was called to order by the President.

The following names were presented to the Executive Committee, and elected members of the Association:

Albert G. Palmer,	Washington, D. C.
John Lindsay O'Neal,	Philada.
Edward Saunders,	St. Louis.
Wm. H. Dornin,	"
Isaac E. Jones,	"
Samuel D. Hendel,	"

The Report of the Committee on Weights and Measures accepted and laid on the table at a previous sitting, was now on motion, referred to the Executive Committee for publication. (See page 169.)

Moved and carried, that a new Committee on Weights and Measures, to have the subject in hand during the next year, be appointed by the Chair. A. B. Taylor, Thos. Hollis and C. B. Guthrie, were appointed.

The Report on the Preliminary Revision of the Pharmacopœia, accepted and laid on the table at the second session, was now on motion referred to the Executive Committee for publication. (See page 177.)

On motion of S. M. Colcord, it was resolved to appoint a committee of three, whose duty it shall be to consider and revise the several essays constituting the report on the preliminary revision of the Pharmacopœia, and to present a final and more concise report on the subject at the meeting in 1859. Edward

left home, expecting to be present at this meeting; not knowing whether he had prepared a written paper on the subject, Mr. Stearns reported verbally, that American castor is largely exported from Michigan, being collected by the attachees of the Hudson's Bay Company, hunting in their dominions north of Lake Superior, and by the Indian trappers of Michigan, who, after drying the sacks, when collected in the usual way, by hanging them in the smoke of open fires, dispose of them to the agents of fur dealers who penetrate the hunting grounds. Thus they find their way into our own market, and to Europe. The great demand for furs for the past few years has necessarily so glutted the market with this drug, that its price has reached the lowest point ever known.

27th. On professional intercourse between Physicians and Pharmaceutists, drew forth a paper from S. M. Colcord, which was referred to the Executive Committee for publication. (See page 368.)

28th. On Saccharides. Answered by a paper from Eugene Dupuy, which was referred to the Executive Committee for publication. (See page 318.)

29th. On Cod-liver Oil. Not being reported on, this query was dropped from the list.

30th. On the cultivation of Liquorice in the United States. Answered by Thomas P. James, in a paper which was referred to the Executive Committee for publication. (See page 378.)

31st. On the causes of deterioration of Medicinal Preparations, and the best means of obviating them. Continued to Edward Parrish.

32d. On the use of Native Wines and Brandies as menstrua. Frederick Stearns read a paper illustrated by specimens. It was referred to the Executive Committee for publication. (See page 379.)

Moved, by John Meakim, that the portion of the paper on Professional Intercourse, beginning—"It is a fact well known to our profession, that to educate," &c., (page 370,) be stricken out by the Executive Committee before publishing it in the "Proceedings."

The motion being put to vote, was not adopted.

A paper on the influence which manufacturing pharmacy has

they admit the idea that such a subject, carried to completeness, would necessarily occupy a larger volume, they yet deem the paper now presented contains so much valuable information as to render it worthy of a prominent place in the proceedings of this body.

All of which is respectfully submitted.

I. J. GRAHAME,
FREDERICK STEARNS.

The consideration of Scientific Reports and Essays being resumed, the answers to queries referred last year were called for as follows:

16th Query. On the best powder to be employed in rolling pills. No answer being presented by Wm. A. Brewer, to whom it was referred, it was dropped from the list.

17th. On Iridescence as a test of purity of essential oil of bitter almonds. No answer being received, the query was dropped from the list.

18th. On Canada pitch, balsam of fir, and oil of hemlock, was referred to S. P. Peck another year.

19th. On the cultivation of the Elaterium Plant, &c. No written report being received from John Buck, to whom it was referred, it was dropped from the list.

20th. On Georgia and Florida Arrow Root. An interesting paper, illustrated by a drawing, was received from R. Battey, and on motion, referred to the Executive Committee for publication. (See page 332.)

21st. On the production of sugar from Sorghum saccharatum, was continued to R. Battey another year.

22d. On the production of Volatile Oils. No report being received, was dropped from the list.

23d. On Tests for detecting adulterations in Volatile Oils. A paper by John M. Maisch was read in answer, and referred to the Executive Committee for publication. (See page 344.)

24th. On the cultivation of Arnica in the United States. Continued, by request, to Henry A. Tilden.

25th. On the resin of Silphium laciniatum, or resin weed. Continued to Edwin O'Gale, who by letter to the Corresponding Secretary explained his inability to answer at this time.

26th. On the sources of American Castor. Mr. Stearns explained that Mr. Spence, to whom this query was referred, had

The Committee appointed to confer with the Agricultural Department of the Patent Office, made report as follows, which was adopted.

The Committee to whom was referred the subject of an application to the Agricultural Bureau of the Patent Office, as brought to the notice of the Association by Mr. D. J. Browne,—Report that they have considered the subject, and recommend that an application be filed in the Patent Office, requesting, that on the reception by the Department of any medicinal roots, plants, or seeds capable of yielding plants, that they forward to the Secretary of the Colleges of Pharmacy at Boston, New York, Philadelphia, Baltimore, and Cincinnati; the Pharmaceutical Associations of Washington, Richmond, St. Louis, and San Francisco, and to parties in Detroit, New Orleans, Charleston and Nashville, to be designated by the Committee, such parcels as they deem sufficient for experimental purposes.

Your Committee recommend that the practical carrying out of this business be referred to a Committee of four members, who shall be instructed to draw up an application to the Agricultural Bureau, and file it as above directed, and who shall address, on behalf of the Association, communications to each of the recipients indicated, enlarging on the importance of giving any specimens sent to them by the Department the most careful attention as regards culture or analysis, as the case may require, and that they communicate the results to the Agricultural Bureau as early as possible thereafter.

Your Committee recommend that, this subject be referred to the four following gentlemen, viz: John L. Kidwell, of Georgetown, D. C.; F. S. Walsh, of Washington, T. P. James, of Philada.; and W. A. Brewer, of Boston.

Respectfully submitted,

WILLIAM PROCTER, JR.,
C. B. GUTHRIE,
FREDK. STEARNS.

The following Report was read and accepted, and, on motion, the "Syllabus of a Course of Study" was referred to the Executive Committee for publication. (See page 103.)

Your Committee, to whom was referred the report of Prof. Procter, upon "A Syllabus of a Course of Study appropriate to the Student of Pharmacy," beg leave to report, that upon an examination of said paper they are of opinion that it should be published in the "Proceedings" of the present meeting, *in extenso*. It will be understood by the Association, that the author of the paper in question hesitated to have it published in the "Proceedings," on account of its not treating the subject at such length as he deems necessary to render it a complete Syllabus. Your Committee, while

Following the above, E. R. Squibb commenced the reading of his volunteer paper, entitled, Suggestions in Regard to the Revision of the U. S. Pharmacopœia.

The hour being late, the further reading of Reports, Papers, &c., was dispensed with, to be continued to-morrow morning.

The following was offered by Dr. Guthrie, and carried.

Inasmuch as this Association has heretofore recognized the Law of Congress, commonly known as the Drug Law, as beneficial in its results, and when fully carried out a protection to the community against adulterations and sophistications, and believing that law to be imperfect and requiring amendments, therefore,

Resolved, That the memorial by a Committee of this Association for presentation to Congress, be also placed in the hands of the Hon. Secretary of the Treasury, with an appeal to him for such recommendation. (See page 234.)

Dr. Guthrie, according to previous notice, moved to strike out the Fifth Section of Article Second of the Constitution, and insert:

SECTION V. The nomination of Officers for the ensuing year shall be in open Convention, and shall be made immediately after the delivery of the President's Address, such nominations being sent to and announced by the Chair, and the election shall be by ballot, at the opening of the succeeding meeting.

On motion, it was laid on the table.

Mr. Stearns offered a resolution, which was carried, that a Committee of two be appointed to examine and report upon the specimens on exhibition. The Chair appointed John Meakim and E. Donnelly to constitute this Committee.

Adjourned to 8 o'clock to-morrow morning.

Fourth Day, Morning Session.

The meeting was called to order by the President. The minutes of the last session were read and adopted.

Edward R. Squibb resumed the reading of his paper on the Revision of the U. S. Pharmacopœia.

On motion of Prof. Procter, the thanks of the Association were tendered to Edward R. Squibb for the valuable information contained in the paper just read, and it was referred to the Executive Committee for publication. (See page 386.)

ferred for publication. (See Scientific Reports and Essays, page 301.)

7th. Query. On the Medicinal Plants of Michigan, reported on by Frederick Stearns, in a valuable paper, which was referred for publication. (See Scientific Reports and Essays, page 286.)

Professor Joseph Henry being present, was introduced to the meeting and made some very interesting remarks, suggesting the co-operation of this Association with the Smithsonian Institution, over which he presides, especially in obtaining and extending information respecting medicinal plants.

A vote of thanks was tendered Prof. Henry for his communication, and the facilities afforded the Association, for holding its sessions in the Institute.

The queries referred last year, being again taken up, were disposed of as follows:

8th. Query, On Mustard. The Association being informed of the unexpected absence of Mr. Parrish, in Europe, as a reason for his failure to report upon the subject, the query was referred to him again to report next year.

9th. Query, On Coating Pills with Sugar, &c., was referred to John Canavan for another year at his own request.

10th. Query, On Podophyllin. Dr. Stabler, to whom this subject was referred, read a report which was accepted and referred to the Executive Committee for publication. (See Scientific Reports and Essays, page 315.)

11th. Query, On Southern Prickly Ash Bark. No answer being received, Mr. Wayne was excused from its investigation.

12th. Query, On Pharmaceutical Menstrua, having been misunderstood owing to an accidental misprint, was not reported on by W. H. Pile.

On motion, it was ordered that those queries not reported on should be so entered without being further referred.

13th. Query, On Wild Cherry Bark. Prof. Procter read a monograph of this subject, which was referred for publication. (See Scientific Reports and Essays, page 319.)

14th. Query, On the Oil of the Brazil Nut. Dr. Edward Donnelly read his answer to this, illustrated by an oil painting and a series of specimens, which was referred for publication. (See Scientific Reports and Essays, page 327.)

they grow; embracing cotton, tobacco, the common potato, the Chinese yam, the Sorghum cane, and Indian corn. A new principle, or red coloring matter, highly astringent, has been discovered in hemlock bark, (*Abies Canadensis,*) and a substance analogous to lupulin in the samara of the wafer bush, (*Ptelia trifoliata,*) which has been successfully employed as a substitute for hops. From these results it would appear expedient to make further trials with other native trees and plants.

On motion of Dr. Guthrie, a vote of thanks was tendered to Mr. Browne for his remarks, and to the Commissioners of Indian Affairs for the information furnished and the disposition to co-operate in the objects of the Association.

It was, on motion, directed that a committee of three be appointed to confer with the Agricultural Department of the Patent Office and the Commissioners of Indian Affairs, on the subject of introducing medicinal plants and collecting information.

The Chair appointed, Prof. Procter, Dr. Guthrie and Mr. Stearns, to the service.

On motion of Mr. Kiersted, the nominations for Standing Committees, not acted upon by the Association, were referred back to the Nominating Committee.

The consideration of subjects referred last year for investigation being now called for, they were taken up in the order in which they appeared in the minutes of last year, and disposed of as fellows:

4th. Query, On Nicotina, was reported on by Professor Procter. This paper was referred to the Executive Committee for publication. (See Scientific Reports and Essays, page 236.)

On motion, adjourned to 7½ o'clock in the evening.

Evening Session.

The meeting was called to order by the President.

Subjects referred for investigation were again called up from the minutes of last year.

5th. Query, On Wine of Ipecacuanha. Joseph Roberts, of Baltimore, not being prepared to report, for a sufficient reason, it was referred to the Committee appointed to report further subjects for reference.

6th. Query, On Powdered Blue Pill Mass, reported on by Charles Bullock, through Prof. Procter. This paper was re-

From the favorable results obtained from a barrel of chufas, (*Cyperus esculentus*,) imported by the Patent Office in 1854, upwards of 100 bushels were ordered from Spain, which arrived in due time last spring for general dissemination, and there is reason to believe the culture has been successful in every State in the Union. From the recent analysis of this tuber, it promises to be of great value for fattening poultry and swine, besides numerous uses in pharmacy, and other domestic arts. The following is the analysis of the tubers, recently made by Dr. Charles T. Jackson, of Boston:

Water	15.50 per cent.
Fibrous matter, ...	21.45 " "
Starch	27.00 " "
A peculiar sugar, (like manna) ; .	12.25 " "
Wax	0.50 " "
Fat oil	16.65 " "
Mucilage, or gum, with a little albumen	6.65 " "
	100.00.

When these tubers are beaten to a paste, and mixed with water, a remarkable emulsion is formed, which, after straining, resembles milk in appearance. The fat at length rises to the surface, and looks like cream, while most of the starch subsides to the bottom of the vessel, but enough still remains suspended to give the emulsion the appearance of thin or skimmed milk. Thus, mingled with water, the most nutritive ingredients of this plant may be taken as a drink. It is much used in this manner by the Spaniards, under the name of "Orchata de Chufas." This emulsion may be sweetened and flavored so as to make it very agreeable to the taste. It is also practicable to obtain a considerable proportion of oil from these tubers by pressure, after which the remaining cake will still serve as a valuable food for stock, and add to the richness of the milk, if fed to cows.

Efforts have also been made by the Patent Office to extend the culture of the olive, the fig, the prune, the Zante currant, the raisin grape, liquorice, the opium poppy, Fenugreek and Chinese tea; but with what success, is not fully known in all cases, as we have few, if any physic gardens or experimental farms in this country, in which trials could fairly be made. It is known, however, that all these products will thrive in various parts of the United States, and doubtless might be made more or less profitable, if their culture were prosecuted with care. The establishment of gardens or trial grounds by the American Pharmaceutical Association, conjointly with the Government or the Smithsonian Institution, for these purposes, would unquestionably lead to beneficial results.

Among other objects of investigation by the Patent Office, may be mentioned the analysis of various trees and plants, and of the soils in which

The following were proposed for membership by the Executive Committee, and elected:

S. B. Waite, Washington, D. C.
A. Vogeler, Baltimore, Md.
Lewis M. Smith, Washington, D. C.
Leander Neal, Lancaster, Pa.

The Report of the Committee on the Progress of Pharmacy was next taken up. It being very voluminous, the Chairman, read only such parts as he thought most interesting. It was on motion, accepted, and referred to the Executive Committee for publication. (See page 49.)

D. J. Browne, Esq. of the Patent Office, was present by invitation, and being introduced to the Association, made some interesting statements relative to the introduction of some medicinal plants into this country.

The following is an abstract of his remarks:

The time for believing that the exclusive possession of any benefit contributes solely to the privilege or prosperity of any particular country or kingdom, has gone by; and the principles of free and universal intercourse and exchange are now conceded to constitute the surest foundation for the happiness of nations. This is so obviously true, in matters of this sort, that it cannot for a moment be doubted. Hence it may be inferred that there is ample room for exertion on the part of our general government, as well as of States or individuals, to increase our agricultural and botanical riches, more especially those products which so conspicuously and permanently add to our useful and economical resources.

Among the objects of interest, and which promise to be of the greatest importance to the country, I would instance the following:

The acorns of the cork oak (*Quercus suber*) have been imported in considerable quantities from the south of Europe, and have been successfully cultivated in various parts of the Middle and Southern States, even as far north as College Hill, near Cincinnati, in Ohio. As it is a pleasing, foliaceous evergreen, and of somewhat hardy constitution, its substitution for other trees which yield little or no profit would involve but little labor or expense; and yet benefits may be expected from it in fifteen or twenty years, and for centuries thereafter. Our importation of cork and corks, in 1857, exceeded $250,000, and as the demand, in time, will doubtless be greatly increased, we shall then be able to meet it with a domestic supply, the advantage of which will be especially realized in connection with the wine culture, which is also at present receiving the encouragement of Government.

one year, that members may know how they stand, and give them a chance to make their account good before striking their names from the roll of members, as the Constitution provides.

SAMUEL M. COLCORD, Treasurer.

American Pharmaceutical Association in account current with S. M. COLCORD, *Treasurer.*

1857.	DR.	
Sept. 14.	To Discount on money,	$0 35
28,	" Advertising in Med. Journal,	5 00
Nov. 17.	" Draft, Executive Committee,	304 54
19.	" Freight, on books,	70
1858.		
Aug. 27.	" Postage and Stationary,	6 75
25.	" Printing,	3 25
Sept. 2.	" Postage,	3 00
4.	" Discount on money,	23
10.	" Balance on hand,	252 55
		$576 37

1857.	CR.	
	By amount rec'd from previous Treasurer,	$96 63
	" Subscriptions rec'd at Annual Meeting, 1857,	295 00
	" " " during year 1857,	24 00
	" " " " " 1858,	148 00
	" Sale of books,	4 74
	" Subscriptions rec'd in Sept. 1858,	8 00
		$576 37

On motion, a committee of two, consisting of C. B. Guthrie and Richard Stabler, were appointed to audit the Treasurer's account. On motion it was

Resolved, That a committee of two be appointed to prepare and report at a future sitting, a list of subjects for investigation, to be referred to members. The Chair appointed W. Procter, Jr., and F. Stearns, the committee.

On motion, adjourned, to meet at 3 o'clock, P. M.

Afternoon Session.

The meeting was called to order by the President.

The Report of the Committee on the Preliminary Revision of the Pharmacopœia was read by John Meakim, in the absence of C. T. Carney, Chairman. It was on motion, accepted, and again laid on the table for future action. (See page 177.)

The Report of the Committee on the Adulteration of Drugs and Medicines was called up, and read by the Chairman, Dr. C. B. Guthrie, who made some verbal remarks, stating that the report was entirely his own, and wishing to be considered responsible for its contents.

The report was, on motion, accepted. (See page 222.)

The Report on Local Unofficinal Formulæ was called up, and read by the Chairman, John Meakim, and was accepted. (See page 229.)

The Report on the Amendment of the U. S. Law regulating the importation of Drugs and Medicines was read and accepted. (See page 234.)

The Treasurer made the following report:

Treasurer's Report, 1858.

To the American Pharmaceutical Association.

The Treasurer has the satisfaction to report the finances of the Association in a sound condition. It will be seen by the statement rendered, that we have $252.55 in the treasury at the present time, beside a balance in the hands of the Executive Committee.

There is due the Association, including sums of doubtful collection, from those who have returned no answers to calls made by the Treasurer, from various causes, the sum of $579, viz:—dues in 1855, $36; 1856, $62; 1857, $146; and 1858, $335; making a total amount on hand and due, of near $800; allowing the amount due for contributions of 1855 to be not collectable, of course a corresponding amount would not be available for the years 1856, 1857, and 1858, making in all $144; and should the coming year prove the same, our suspension account would be about $300, which, deducted from the gross amount, would leave as the available resources of the coming year, $600, or nearly double the amount of our expenditures the past year.

I would recommend to place the names of all in arrears three years, on a suspension list, and publish it in the Proceedings

The Association then proceeded to ballot for officers, and the following were elected:

PRESIDENT,

JOHN L. KIDWELL, - - -	Georgetown, D. C.

VICE PRESIDENTS,

1st. EDWARD R. SQUIBB, - - -	New York.
2d. JAMES O'GALLAGHER, - - -	St. Louis
3d. ROBERT BATTEY, - - -	Rome, Georgia.

TREASURER,

SAMUEL M. COLCORD, - - -	Boston.

RECORDING SECRETARY,

W. J. M. GORDON, - - -	Cincinnati.

CORRESPONDING SECRETARY,

AMBROSE SMITH, - - - -	Philadelphia.

On motion of Dr. Guthrie, the election of the Executive Committee and Committee on the Progress of Pharmacy was deferred until to-morrow morning.

The President elect was now conducted to the chair by the retiring officer, and made a pertinent speech, returning his thanks for the honor conferred, and promising his best exertions for the benefit of the Association.

The following committees made reports, which were read by their titles and laid on the table for further consideration:

The Committee on Weights and Measures.

The Committee on the Adulteration of Drugs.

The Committee on the Amendment of the U. S. Law regulating the importation of Drugs and Medicines.

The Report of the "Committee on a Syllabus of a Course of Study appropriate to the Student of Pharmacy," introduced at the last sitting, was now called up, and at the suggestion of Prof. Procter, was referred to a committee of two for examination.

The Chairman appointed I. J. Grahame and Frederick Stearns to the duty.

The Report of Committee on Weights and Measures was now read in detail by C. B. Guthrie, Chairman, and on motion, accepted, and referred to the Executive Committee for publication. (See page 169.)

Second day—Morning Session.

The President called the Meeting to order at 9 o'clock. The minutes of yesterday were approved.

Numerous members not present at the last session, reported themselves in attendance.

The following candidates for membership, proposed by the Executive Committee were duly elected members:

David Roberts,	Boston, Mass.
Chas. A. Merrill,	Exeter, N. H.
William Brown,	Boston.
Oliver H. Webber,	Boston.
William Gay,	Cambridgeport, Mass.
Geo. D. Towne,	Boston.
D. B. Kidder,	Boston.
Andrew R. Fox,	Boston.
Granville M. Clark,	Boston.
George W. Ricker,	Boston.
C. H. Lyon, Jr.,	Boston.
George S. Kendrick,	Lebanon, N. H.
B. W. Conant,	Woburn, Mass.
Richard B. Saunders,	Chapel Hill, N. C.
Harmer D. Scully,	Pittsburgh, Pa.
B. F. Scriber,	New Albany, Ind.
Henry A. Tilden,	New Lebanon, N. Y.
A. A. Solomons,	Savannah, Georgia.
W. W. Solomons,	" "
Cornelius Boyle,	Washington.
Fayette W. Johnston,	Fredericksburgh, Va.

The Committee appointed to nominate officers for the ensuing year, produced the following nominations:

For President—John L. Kidwell, Georgetown, D. C.

For Vice Presidents,—1st, Edward R. Squibb, of New York; 2d, James O'Gallagher, St. Louis, Mo.: 3d, Robert Battey, Rome, Georgia.

For Recording Secretary—W. J. M. Gordon, Cincinnati.

For Corresponding Secretary—Ambrose Smith, Philadelphia.

For Treasurer—Samuel M. Colcord, Boston.

of Pharmacy, the Association resolved to meet the following year, "on the 2d Tuesday of September" in that city.

The American Pharmaceutical Association accordingly commenced its sixth annual meeting, at the Hall of the Philadelphia College of Pharmacy, Sept. 8th, 1857. Five years had elapsed since the first organization and meeting of this body took place in the same building. I need not say that the members of that College were glad to extend the right hand of fellowship to their associates from other and distant parts of the Union. In the absence of the President, who was in Europe, Vice-President Frederick Stearns read the annual address to the Association. The Colleges of Pharmacy of Massachusetts, New York, Philadelphia, Cincinnati and Maryland, and the Washington Association, were duly represented. The deep interest manifested in the labors of this, the Sixth Anniversary of our Association, may easily be learned from its published Proceedings. These have been widely spread before the public, and are of too recent a date and have been too generally read by pharmaceutists, to need much reference from me.

The Reports and Essays upon scientific subjects, referred from the previous year—"On the Sale of Poisons and the legal means of restraining it;" on "the Progress of Pharmacy," on "Weights and Measures," and on "Local Unofficinal Formulæ," were among the subjects that engaged the attention of the Convention.

My official relation to you as President of the American Pharmaceutical Association is about to close; permit me to thank the members of the Association for this mark of distinction, and for the indulgence of courtesy extended to me during the past annual meeting.

The duties which will engage our attention cannot fail to be mutually profitable and interesting; the past in that respect will be a guarantee for the future. There is a feature in these annual assemblies which must have impressed the mind of every member who has participated in the proceedings of former years, that of earnestness and zeal in the performance of the duties, and of unity of purpose and entire harmony in conducting the business of the Association, embracing as it does the North, the South, the East, the West, in one common brotherhood.

May we on the present, as on each succeeding Anniversary, if permitted thus to meet, endeavor to discharge the obligations which rest upon us, under a deep conviction, (in the language of an eloquent Professor in relation to pharmacy) that, "it is the sacred duty of every member of a liberal profession to rise at times above his more personal and pecuniary interests, and to contribute somewhat of his time, his influence, and his abilities to the common benefit of his profession."

On motion of Mr. O'Gallagher, the thanks of the Association were tendered the President for his able address.

Then adjourned.

Columbia, were represented on this occasion. The State of Michigan was as usual ably represented. And there were many who became members and took an active part in the proceedings from Maryland, Massachusetts, District of Columbia, Virginia, and other States. This was the Fifth Anniversary.

The proceedings of the Association have steadily increased in interest and importance from the first organization.

The Committee "on Text Books," through its able chairman made a valuable report; but the subject, somewhat modified, was again referred to the Committe, to report a "Syllabus of a Course of Study."

The subject which was continued from the meeting held in Philadelphia, will again come before us at this session, surrounded as it is with difficulties involving necessarily more time and labor than any committee could give it. If it would not be considered intrusive, I would suggest that this Association throw all its influence in favor of the Chairman's undertaking to edit and publish a work *on Practical Pharmacy*. Comprehensive as he would be able to make it, such a *Standard Text Book* in addition to the United States Dispensatory, with "Parrish's Pharmacy," "Mohr, Redwood and Procter," and treatises now in use on Chemistry and Botany, might answer the purpose so especially desired by this Association—that of supplying to a certain extent the works themselves, so much needed, to place in the hands of the young men who enter our stores, with the view of acquiring a knowledge of pharmacy.

Its rapid sale would no doubt make it remunerative, but this Association might so arrange it as to divest the undertaking of all risk to the Editor.

I do not, of course, know that our esteemed associate would undertake it. I only know, with many others present, how thoroughly the labor would be done, if it should meet his approval to enter upon the laborious duties it would involve. Any other proposition, however, that may seem advisable, and that an intelligent and deliberate consideration of the subject may indicate, I should take a great interest in uniting with the members now present in carrying out.

At this meeting a final report was made on the certificate of membership, which had been previously issued as directed by the meeting in New York.

The Revised Constitution was carefully considered in detail and each article separately adopted, and as thus perfected it remains to be the Constitution of the "American Pharmaceutical Association."

A list of subjects, embracing nineteen in number, was introduced by the Executive Committee, and referred to the members who were willing to undertake their investigation, to report the following year.

George W. Andrews, a highly esteemed citizen and member of our profession, of Baltimore, was elected President this year.

An invitation having been extended on behalf of the Philadelphia College

the adaptation of these wines for medicinal purposes, and the probable amount and quality of the tartar likely to be produced annually."

William B. Chapman, a gentleman who has manifested a warm interest in the Proceedings of the Association, was chosen President.

The Association adjourned to meet at its Fourth Anniversary, in the city of New York, "on the second Tuesday in September, 1855."

Delegates from eight States were present at the opening of the session, and subsequently members joined our ranks from Detroit, Buffalo, Louisiana, and New Jersey. Among the important matters which occupied the meeting was a Report upon the Revision of the Constitution. After sundry Amendments, the subject was again referred to a Committee of three, for further attention, and to be brought forward the next year.

The Committee on the Certificate of Membership produced a Report. One of their members having been removed by death during the preceding year, Wm. Procter, Jr., and Jno. Meakim were added to the Committee, and authority given to decide upon the design, and issue the certificate when completed.

An interesting "Essay on the growth and production of Wines in the West, and on Catawba Brandy and Tartar," by Edw. S. Wayne, was read.

Important Reports on "Standards for Drugs," on the subject of "Home Adulterations," &c., were produced and read. It was at this meeting that a Committee was first appointed to report on "What are the best Text Books published for study and reference."

Perhaps I might, without giving offence, advert to a Preamble and Resolution which were adopted on that occasion, the mover (an esteemed associate of this body) being now in Europe, if only for the purpose of reminding us of what were the opinions of the Association at that day. It is as follows:

"Whereas the members of this Association, who meet annually to transact its business, and forward its objects, have generally no leisure for pursuits not immediately connected therewith,

Resolved, That as a body, we decline in advance, any convivial or other entertainments, and esteem it important, as our members increase, to prevent the practice of the last three years in this respect from being considered a precedent in the future."

On this occasion, as well as at the opening in Baltimore, one who has taken an active part and a decided interest in the prosperity of the Association, was its Presiding Officer, John Meakim.

The Association adjourned to meet in Baltimore, "on the second Tuesday, of September, 1856."

The American Pharmaceutical Association assembled agreeably to the resolution of adjournment, in the city of Baltimore.

The Massachusetts, New York, Philadelphia, Cincinnati and Maryland Colleges of Pharmacy, and the Apothecaries' Association of the District of

local Pharmaceutical Societies, firmly to establish a bond of union between the educated and intelligent Pharmaceutists and Druggists throughout the Union.

Daniel B. Smith was elected the first President of "The American Pharmaceutical Association." A thoroughly educated Apothecary, with a mind richly stored with knowledge in the branches of science which appertain to his Profession, as well as deeply versed in general literature, upon no one could the choice have more appropriately fallen.

Before the close of its sessions, an invitation was extended on behalf of the Massachusetts College of Pharmacy to assemble next year in the city of Boston, and the time fixed for the Second Annual Meeting was "the 24th of August, 1853." Delegates from Virginia, Ohio, Pennsylvania, New York, Massachusetts, and Representatives from Indiana, Tennessee, Vermont, and Maine were present.

The labors of the Standing Committees produced on these occasions, with the form of Reports and Essays, embody an amount of information, that of itself amply compensated any member of our profession for the time and money necessary to enable him to participate in the proceedings of the Convention. I need not detain you by more than a mere reference to them. It is refreshing sometimes to look back and observe the high ground which the Association took here in the second year of its existence, in reference to secret or quack medicines. The two resolutions adopted on that occasion would bear to be repeated here, if I were not fearful of trespassing on your time.

By special invitation from the Ohio Delegation, the Association adjourned to meet in Cincinnati, "on the 25th of July, 1854." Our worthy associate Wm. A. Brewer, ably presided over the deliberations of the meeting, which was held in the city of Boston.

On this Third Anniversary of the Association there were fewer Delegates present than on any that preceded it. Representatives, however, from Tennessee, Kentucky, Ohio, Pennsylvania, Massachusetts, and Maine, were in attendance.

The time for holding this session appears to have been unpropitious. The weather was very warm, and there was a good deal of cholera and other epidemic disease prevailing through parts of the Union. The address to the Pharmaceutists of the United States, their clerks and apprentices, was produced at this meeting, and is one among the many valuable Reports from the pen of an esteemed associate, who acted on that occasion as Chairman of the Committee on Education, and for whose untiring zeal and efficient labors in the cause of Pharmacy since our first organization, the thanks of The American Pharmaceutical Association are eminently due.

As great attention has been paid at Cincinnati to the culture of the grape, and the manufacture of wine, a Committee was appointed to "inquire into

and chemicals, for the guidance of the Special Examiners, mainly led to this first organization.

The delegates from the Philadelphia College of Pharmacy having been instructed by that body to propose an organization upon a more comprehensive basis, this Convention adopted a Preamble and Resolutions, setting forth that the advancement of the true interests of the great body of Pharmaceutists throughout our country, is a subject worthy of earnest consideration; that in their intercourse among themselves, with Physicians and the Public, they should be governed bp a code of Ethics, calculated to elevate the standard and improve the practice of our art.

The establishment of Schools of Pharmacy, a more extended intercourse between the Pharmaceutists of the several sections of the Union, and the forming of Associations for mutual protection and further education and improvement of their assistants, was strongly recommended.

They resolved, "that a Convention be called, consisting of three Delegates each from incorporated and unincorporated Pharmaceutical Societies, to meet at Philadelphia, on the first Wednesday in October, 1852, when all the important questions bearing on the profession may be considered, and measures adopted for the organization of a National Association, to meet every year."

Our esteemed associate, Dr. C. B. Guthrie, who was one of the first and ablest pillars in the new organization, presided over the deliberations of this Convention.

The initiatory steps thus taken in the city of New York, led to most important results. The following year, in obedience to the call, which was widely published, Delegates from Massachusetts, Connecticut, New York, Pennsylvania, Maryland, Virginia, and Ohio, assembled in Philadelphia, on the sixth day of 10th month, (October,) 1852.

It was here that the corner stone of the present organization was laid. The Assembly of Delegates thus convened in Philadelphia, was merged into the American Pharmaceutical Association.

A Constitution was formed and adopted after a mature deliberation on the part of the gentlemen assembled, representing as they did most of the Pharmaceutical Societies from seven different States.

That Constitution, subsequently modified and improved, with its Preamble and Code of Ethics, constitutes the Magna Charta of our National Association.

With the sentiments they contain, which are applicable to all future time, many of you are familiar.

I need not say to you that this voluntary action on the part of the Pharmaceutists of the Union, has already done much, and is destined still further to revolutionize the condition of Pharmacy in this country.

It has put its seal upon the hydra-head of Quackery. It is aiding, by the general diffusion of knowledge, and by encouraging the formation of

look for difficulties to occur in regard to membership; both in reference to the annual contributions and Ethical relations. Hence the duty of the Executive Committee to keep a correct roll list of members, and reporting the names of delinquents who voluntarily separate themselves from us by refusing the small annual fee during more than three successive years, is one of decided importance to the welfare of the Association. Upon this important Committee devolves the duty of the annual publication of the Proceedings of the Association. Those of last year have involved no little labor, and it will be perceived that they are rendered more complete by containing a correct list of the officers since the first organization, also the date of the election of each member.

To no one of the permanent features of the Constitution do we look with greater interest than to the Report on the Progress of Pharmacy. From the able Chairman of this Committee, whose industry is only equalled by his pharmaceutical ability, we may anticipate an exposé of nearly all that has transpired that is novel and interesting in the pharmaceutical world since our last meeting.

The advantages which have hitherto attended the plan of referring subjects to individual members for investigation, indicate the propriety of appointing a Committee at an early day of two members qualified for the task, to prepare and submit a list of subjects for reference at this meeting.

Although the Constitution does not provide for any list of Prizes, it will undoubtedly be found a great incentive to action, and it is understood that the ablest Essay or Investigation submitted to the Association, upon any subject connected with our Profession, shall receive an award to be determined by a Special Committee.

In recurring to the past history of this body, and tracing it from its small beginning to the present anniversary, it is a source of no little satisfaction to all who feel a deep interest in the progress of Pharmacy to witness how much has been accomplished in that period; and as there are many present who were not members during the earlier years, but have more recently joined our ranks, it has occurred to me to present a short sketch of the history of the Association.

It was in the Autumn of the year 1851, (October 15, 1851,) in pursuance of a call issued by the College of Pharmacy of the city of New York, that a Convention of Delegates from some of the Colleges of Pharmacy assembled in New York, to take into consideration subjects of deep interest to our Profession. The first incentive to action evidently flowed from the inequality in the practical working of the Drug Law, then recently passed by Congress.

A desire to strengthen the hands of the General Government in excluding from our ports sophisticated and inferior articles of the Materia Medica, as well as to establish standards of quality and strength for imported drugs

Resolved, That D. J. Browne, Esq., Prof. Henry, Prof. Spencer M. Baird, Prof. Craig, Prof. Cunley, Prof. Clarke, Prof. Riley, Commander M. F. Maury be invited to attend the sittings of the Association, and to present any remarks they may have to offer.

The President, Mr. Charles Ellis, read the Annual Address, as follows:

FELLOW ASSOCIATES:

The seventh anniversary of the American Pharmaceutical Association has arrived; and among the peculiar duties which belong to the occasion, is that which requires of its retiring President a general view of the affairs of the Association, during the period which has elapsed since its last meeting, together with any information as to its prospects, and suggestions for its future government, that may occur to him.

It is cause for gratitude and thankfulness to an overruling Providence, that so many of us have been permitted again to assemble under its auspices, in the Metropolis of the Union; and I may venture to express the hope, that on the present occasion we shall have a rich harvest in the interesting and valuable Reports and Papers from the Committees and individuals to whom labors of investigation have been entrusted.

Among the duties assigned to Committees, the preparation of a Syllabus of a course of study appropriate to the student of Pharmacy, is equally important with any other. The Chairman of that Committee will submit a Report, with reasons for asking its further reference. From the Committee on Weights and Measures, a report may be looked for.

It is understood that the important Committee on the revision of the U. S. Pharmacopœia have not been unmindful of their duties; how far the sub-committees may have progressed with their labors, I am not advised. The unwieldy nature of the undertaking, embracing as it does members so widely separated, will sufficiently account for any difficulties that may have beset the Committee. It is greatly to be hoped that they have been successful in getting a general response from those concerned, Medical and Pharmaceutical, who are entitled to a judgment, of the character of our next national Codex. The Committee on the Adulteration of Drugs has been at work, and we may expect a lucid and valuable report from the indefatigable Chairman.

The other Special Committees on Local Unofficinal Formulæ, and on the Amendments of the Law regulating the importation of Drugs and Medicines, will no doubt have some results to lay before us.

The Chairman of the Executive Committee will furnish in his report, the transactions appertaining to his official position, especially in regard to membership. As our Association increases in age and numbers, we may

The edition of certificate of members having been exhausted, a new edition of 200 copies has been obtained.

The Executive Committee have received during the recess fifteen applications for membership; nine of these, who had signed the Constitution, and presented the required vouchers of Physicians and Pharmaceutists, were approved by the members of the Committee and elected; the rest having made their application so near the time of the Annual Meeting, have been retained for presentation and election by the Association at this time, and are as follows:

William J. Jenks, Philadelphia.
Joseph L. Lemberger, Lebanon, Pa.
Charles H. Super, Pittsburg, Pa.
A. H. Grimshaw, Wilmington, Del.
John Baynon, Shrevesport, La.

The Executive Committee, to whom the subject was referred, have not obtained an act of incorporation, in consequence of having relied upon the influence of one of the members of the Committee, who had been a resident of Washington, but was absent during the session of Congress. We would recommend that an act of incorporation should be obtained from Congress, at an early date.

SAMUEL S. GARRIGUES,
JOS. ROBERTS,
W. J. M. GORDON,
On behalf of the Committee.

The report of the Committee on the Progress of Pharmacy was read by its title, and laid on the table for future consideration.

The report of the Committee on a Syllabus for Pharmaceutical Students was read, and similarly disposed of.

The Committee on the preliminary Revision of the Pharmacopœia presented their report, which was read by its title, and laid on the table for future consideration.

An invitation from the Washington Pharmaceutical Association, to the Delegates and Members in attendance at this meeting, to visit Mount Vernon and the tomb of Washington, on Thursday, the 16th, to start at 10 o'clock, A. M., was read and accepted, and on motion, the thanks of the Association were tendered for the invitation.

Mr. F. Stearns moved that when we adjourn, we adjourn to meet to-morrow morning at 9 o'clock. Adopted.

Mr. John L. Kidwell offered the following resolution, which was unanimously carried:

of them contained some interesting points; though the Committee do not hold themselves responsible for some of the views laid down, or ideas expressed in said communications. In collecting this unusual amount of matter and arranging it for publication, the Committee are indebted to the kind assistance of Prof. W. Procter, Jr., and Edward Parrish.

An edition of twelve hundred copies of the "Proceedings" was published, of these two hundred were bound in boards.

Single copies were distributed to each member of the Association free of charge, many of whom afterwards obtained the remaining two copies, to which they were entitled by transmitting the amount of the postage on the same. In the distribution and sale of the Proceedings, we are indebted to the assistance of S. M. Colcord, of Boston; John Meakim and H. Bridgeman, of New York; Joseph Roberts, of Baltimore; W. J. M. Gordon, of Cincinnati; F. Stearns, of Detroit; and Eugene L. Massott, of St. Louis. Most of the above named gentlemen still have some copies of the Proceedings on hand, so that members and others in those cities can be supplied with them. Copies were sent to most of the scientific and medical journals, to libraries, and other public institutions of the country.

Copies were also sent to some of the European Pharmaceutical Journals, and we have the pleasure of knowing that they have been received and used for the information contained in them.

Quite a number have been sold to parties not members of the Association, showing an increased interest in our operations. It is recommended that the members should use the facilities afforded for obtaining copies of the Proceedings, to cause a more general circulation amongst their friends in the Profession. By this means, we are under the impression that a more general interest can be awakened amongst the Pharmaceutists of the country in the objects of the Association, thus advancing its cause, as well as the interests of the profession.

The Committee report the following stock of "Proceedings" on hand, at the repository, in the Philadelphia College of Pharmacy.

For the year	1852	Exhausted.
"	1853	22 copies.
"	1854	33 "
"	1855	8 "
"	1856	75 "
"	1857	331 " in paper.
"	1857	78 " in boards.

We have obtained three copies of the "Proceedings" for 1852, by which means we have been able to make up three complete sets from that time on. We propose to dispose of these at $1.00 the set, from 1852 to 1856, inclusive. It is again requested to send duplicates of the Proceedings for 1852 to the Chairman of the Executive Committee for 1857–58.

Hervey Herman, Washington.
Edw. Shoemaker, "
John A. Milburn, Alexandria, Va.
Henry Thayer, Boston.
Jas. W. Nairn, Washington, D. C.
T. C. McIntire, "
R. A. Payne, "
S. R. Sylvester, "
John L. Love, "
Jos. B. Moore, "
Edw. Kloman, Baltimore.
Geo. C. Close, Brooklyn, N. Y.
Charles A. Nolcine, Newburyport, Mass.

The following Committee of one from each local organization represented, was appointed by the respective delegations, to nominate officers for the ensuing year.

Henry T. Kiersted, New York,
A. S. Jones, Massachusetts.
W. J. M. Gordon, Cincinnati.
J. O'Gallagher, St. Louis.
Ambrose Smith, Philadelphia.
Israel J. Grahame, Baltimore.
J. L. Kidwell, Washington, D. C.

The following additional members were nominated by the Chair to act on the Committee.

Fred'k. Stearns, Detroit.
Geo. W. Weyman, Pittsburg.
A. P. Sharp, Baltimore.

The report of the Executive Committee was read by the Chairman, S. S. Garrigues, and accepted. It is as follows:

The operations of the Executive Committee for the past year, are embodied in the following report, which they now submit to the attention of the Convention.

After the adjournment of the last meeting of the Association in Philadelphia, the Committee found an unusual number of interesting papers placed in their hands, together with a large number of "unofficinal formulæ," and other communications addressed to the Association, the latter being left to the discretion of the Committee to publish. In exercising this duty they concluded to publish all the papers thus addressed, as most

Lewis E. Higby, Detroit, Mich.
Wm. J. Jenks, Philadelphia, Pa.
Jos. Lemberger, Lebanon, Pa.
Chas. H. Super, Pittsburg, Pa.
A. H. Grimshaw, Wilmington, Del.
John Baynon, Shrevesport, La.
Geo. Fred'k. Ayling, Brooklyn, N. Y.
J. H. Larwell, Wooster, Wayne Co., O.
Geo. A. Sheusler, Cincinnati, O.
Robt. J. Davies, Brooklyn, N. Y.
Henry A. Cassebeer, New York.
Wm. J. Oliffe, "
Thos. T. Green, "
Ray B. Easterbrook, "
Henry King, "
Wm. Egerton, "
Wm. M. Somerville, "
Edw. L. Milhau, "
Geo. O. Bridges, "
Lewis T. Lazell, "
Edw. H. Marsh, "
John H. Currie, "
Andrew J. Parker, "
Saml. N. Stebbins, "
Henry R. Haydock, "
Lucian F. Wheeler, "
John C. Hart, "
Robt. A. Sands, "
Wm. Hegeman, "
Fredk. V. Rushton, "
Jno. D. Dix, "
Wm. A. Gellatly, "
J. H. Westerfield, "
Walter S. Coon, "
Augustus C. Evans, "
Henry Kiersted, "
Edw. R. Squibb, "
E. Raphael Perrot, Philadelphia.
Wm. B. Thompson, "

From the New York College of Pharmacy.

Eugene Dupuy, Henry T. Kiersted,
John Meakim, Alexander Cushman,
John Faber.

From the Philadelphia College of Pharmacy.

Ambrose Smith, Charles Ellis,
Samuel S. Garrigues, William Procter, Jr.,
Alfred B. Taylor.

From the Maryland College of Pharmacy.

J. Brown Baxley, Israel J. Grahame,
Alpheus P. Sharp, Charles Caspari,
William S. Thompson.

From the Cincinnati College of Pharmacy.

William B. Chapman, W. J. M. Gordon,
J. W. Hannaford, Wm. S. Merrill,
John C. Parr.

From the St. Louis Pharmaceutical Association.

James O'Gallagher.

From the Pharmaceutical Association of Washington, D. C.

Valentine Harbaugh, F. S. Walsh,
Joseph B. Walsh, J. L. Kidwell,
Joseph W. Nairn.

The roll being called at this stage of the proceedings, twenty-five members were found to be present.

The following names were reported by the Executive Committee, of members elected since the last annual meeting. M. M. Selfridge, Bethlehem, Pa; George W. Weyman, Pittsburg, Pa.; O. Gilman Dort, Keene, N. H.; Charles A. Junghanns, Cincinnati, O.; J. Chadwick Moody, St. Louis, Mo.; James O'Gallagher, St. Louis, Mo.; Alexander Leitch, St. Louis, Mo.; Samuel W. Osgood, Davenport, Iowa; Wm. Longshaw, Jr., Bayou Sara, La.

The following candidates for membership, proposed by the Executive Committee at this time, were now unanimously elected members:

PROCEEDINGS

OF THE

American Pharmaceutical Association.

MINUTES OF THE SEVENTH ANNUAL MEETING.

The American Pharmaceutical Association commenced its Seventh Annual Meeting, at the Smithsonian Institute, Washington, Tuesday, September 14th, 1858, at 8 o'clock P. M.

The meeting was called to order by Charles Ellis, of Philadelphia, President; W. J. M. Gordon, of Cincinnati, officiating as Recording Secretary.

John Meakim, of New York, Richard H. Stabler, of Alexandria, Virginia, and Alfred B. Taylor, of Philadelphia, were appointed by the Chair, a Committee on Credentials, who after a recess reported the following delegates duly appointed to attend the present meeting.

From the Massachusetts College of Pharmacy.

A. P. Melzar, Boston. H. W. Lincoln, Boston.
Thomas Hollis, " S. M. Colcord, "
Anthony S. Jones, Newburyport.

tion was taken in realtion to the importation and sale of medicines. Below I append the names of the members of the Association, in the order in which they signed the Constitution.

Wm. B. Little,	J. H. Widber,	Eugene Crowell,
Chas. Langley,	M. J. Burke,	S. S. Merrill,
Samuel Adams,	L. Lanszweert,	A. J. Langley,
P. A. Wood,	R. Hall,	James Trimble,
D. Babcock,	Robt. Hagan,	Edward Hall,
Henry Johnson,	Wm. H. Wood,	E. J. Pfieffer,
J. P. Hickey,	Jas. N. Pratt,	Geo. S. Dickey, Jr.,
Wm. H. Brigham,	Chas. Hodge,	J. A. Bauer,
H. A. Crane,	H. D. Taylor,	Jas. S. Folger,
E. P. Sanford,	Geo. E. Hinchley,	E. J. Canavan,
C. P. Pollard,	Chas. Morrill.	

Trusting the session this fall will prove very interesting and agreeable throughout, I subscribe myself, very respectfully, JAS. H. WIDBER,

Cor. Secretary pro tem., San Francisco Pharm. Association.

By the accident before alluded to, the names of candidates for membership from California were received too late for election by the Association, but will receive the attention of the Committee during the recess.

Of the 1,200 copies of the Proceedings printed, 500 have been bound in boards, and a copy in this shape will be mailed to each member. One additional copy, in paper, will be furnished to members on inclosing to the undersigned the cost of postage, 25 cents, or a bound copy, on inclosing the cost of binding and postage, 55 cents. The price of the work in paper is 75 cents; in boards $100. As the cost of publication exceeds the income of the Association for the present year, it is desired that members will promote the general sale of the work.

An edition of the Constitution has just been issued, which will be forwarded to persons desirous of information on the objects and requirements of the Association.

With a view to the pleasure and advantage of the members being accommodated at the same hotel during the session of the annual meeting, as was so fully realized in Washington, it is proposed that a similar advantage be secured during the next meeting, and the members of the Massachusetts College are desired to give timely notice of their arrangements to this end.

S. S. GARRIGUES,
Chairman of Executive Committee.
108 N. Fifth st., Philada.

nual meeting this year. Such being the case, the Association has directed me to address you, giving an abstract of its organization and proceedings.

An informal meeting of the Druggists and Apothecaries of this city was held on the 31st of January last, for the purpose of discussing the propriety of legislation on the importation and vending of drugs and medicines. It was there considered that a preliminary proceeding should be the formation of a Pharmaceutical Association.

A committee was then chosen to draft a Constitution and By-Laws, which were presented and discussed at the second meeting, and adopted at the succeeding meeting.

A committee on credentials was then appointed, and the evening of Feb. 11th, 1858, chosen for organization and the election of officers.

Upon the appointed evening, twenty-two names were signed to the Constitution, after which a ballot was taken for the election of officers, when the following result was declared.

President .....M. J. Burke.
First Vice President.....Wm. B. Little.
Second Vice President.....Chas. Langley.
Corresponding Secretary.....Chas. Morrill.
Recording Secretary .....James H. Widber.
Treasurer.....Wm. H. Brigham.

Trustees.—Samuel Adams, Robert Hagan, Chas. Hodge, Jr., M. Burke, J. H. Widber.

At the succeeding meeting, the following resolution was passed :

Resolved, That notice be given to the druggists and apothecaries throughout the State of the organization of this Association, and requesting their co-operation by the formation of other Societies.

At the next meeting a committee was appointed to draw up a remonstrance to the Drug bill before the Legislature, and against all legislative interference with the importation and vending of drugs and medicines, which remonstrance was afterwards adopted, and laid before the Legislature.

The last meeting of the Association was held about two weeks since, with a larger attendance than usual.

Numerous obstacles peculiar to this State have had to be contended with, in starting and continuing the Association,—the slight acquaintance of its members, the great excitement with regard to the northern mines, and consequent dull times. But there are strong hopes of its becoming a very flourishing Association—creditable and elevating to the profession, and beneficial to the public.

Various preparations of medicines, and new remedies of genuine merit have been presented from time to time, by individual members, before the meetings, and a strong interest has been manifested in its advancement by a majority of the members.

It is at present the only organization of the kind in the State.

The Drug bill, before the Legislature last winter, was defeated, and no act-

The "*Scientific Reports and Essays*" include all the papers read at the meeting, both in answer to queries allotted to members at the previous meeting, and "volunteer papers," which were last year included under a separate head. We have, as instructed by the Association, abbreviated a few of these by omitting portions unsuited to the objects of this publication, and we would suggest for consideration, whether increased authority should not be conferred upon the Executive Committee hereafter to omit objectional or extraneous matter, and to curtail papers which would add largely to the bulk of the Proceedings without increasing their interest.

The Constitution and Roll of Members are included in an Appendix at the end of the work.

The undersigned would here acknowledge the valuable services of his colleague, E. PARRISH, in the compilation of this volume.

Owing to the great difficulty in transcribing and printing proper names, many errors in the Roll have, doubtless, escaped our notice, and we would suggest to all who observe such errors to notify the undersigned or the Treasurer, through whom the corrections can be made. A number of gentlemen elected at the Annual Meeting have not yet subscribed to the Constitution or paid the fees; we have not, however, felt justified in omitting their names from the Roll, but will as early as practicable forward them copies of the Constitution for signature.

Several have applied for election by the Executive Committee since the Annual meeting, with a view to their names being published in this edition of the Roll, but we do not think it expedient to publish the names of members until reported to the Association.

The Corresponding Secretary being necessarily absent from the late meeting, the following report, designed for the Association and directed to him at Washington, was not received until after the adjournment. We insert it as a pleasing evidence of the progress of pharmacy in the Western Eldorado, and in the hope that the new Auxiliary Association may be represented at our future meetings.

SAN FRANCISCO, August 19, 1858.

Mr. Edward Parrish.

DEAR SIR:—Your communication addressed to the San Francisco Pharmaceutical Association, urging the propriety of sending delegates to the annual meeting of the American Pharmaceutical Association, was duly received, and read before the Association.

The great distance from Washington, with the recent organization of the Association, prevents the gratification of the desire to be represented in your an-

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BOSTON MEDICAL LIBRARY ASSOCIATION

NOTE BY THE EXECUTIVE COMMITTEE.

The Seventh Volume of the Proceedings of the American Pharmaceutical Association which is now offered to its members and the profession generally, exceeds in bulk the combined issues of former years. While this fact gives encouraging evidence of the increased interest and zeal of the members, it should lead to an effort to abridge and condense the Reports and Essays contributed to future numbers, within the limits of more convenient perusal and reference.

It is therefore recommended that members offering scientific and practical essays, should omit unnecessary details, and should consult brevity and compactness in their style of composition. Much delay has been occasioned in issuing the present volume, by the unfinished condition of the manuscripts furnished. The necessary correction of "proof," from this cause, has in several instances exceeded the cost of the original composition, besides imposing upon the members of the Executive Committee residing in Philadelphia, labors which should properly belong to the writers themselves.

As on previous occasions, the *minutes* of the several sessions of the Annual Meeting occupy the first place in the volume. These contain the Annual Address of the late President, which will repay general perusal; the Report of the Executive Committee and the Treasurer, and several other short reports.

Under the head of *Reports of Committees*, will be found the Report of the Standing Committee on the Progress of Pharmacy; the Syllabus of a Course of Study intended as an aid to Students of Pharmacy, reported by Prof. Procter, Chairman of the Committee appointed for the purpose; the Reports of the Committees on Weights and Measures, the Revision of the Pharmacopœia, Home Adulterations, Local Unofficinal Formulæ, and the Memorial in regard to the Amendment of the Law regulating the Importation of Drugs and Medicines.

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EXECUTIVE COMMITTEE, and the COMMITTEE ON THE PROGRESS OF PHARMACY.

SPECIAL COMMITTEES.

To Co-operate with the Agricultural Department of the Patent Office in introducing Foreign Medicinal Plants, &c.

JOHN L. KIDWELL, Chairman, FRANCIS S. WALSH,
THOMAS P. JAMES, WM. A. BREWER.

On Weights and Measures.

ALFRED B. TAYLOR, Chairman, THOMAS HOLLIS,
C. B. GUTHRIE.

On the Revision of the U. S. Pharmacopœia.

EDWARD PARRISH, Chairman, ISRAEL J. GRAHAME,
CHARLES T. CARNEY.

On Home Adulterations.

CHARLES T. CARNEY, Chairman, A. P. SHARP,
GEORGE W. WEYMAN, RICHARD H. STABLER,
EDWARD R. SQUIBB, ALFRED B. TAYLOR.

On the Amendment of the United States Law regulating the Importation of Drugs and Medicines.

C. B. GUTHRIE, Chairman, JOHN L. KIDWELL,
A. P. SHARP.

☞ For list of Questions allotted to members, to be answered at the meeting in Boston, see pages 42 to 47.

LIST OF OFFICERS OF THE ASSOCIATION,

SINCE ITS ORGANIZATION.

PRESIDENTS.

Daniel B. Smith,	Philadelphia,	1852–3.
William A. Brewer,	Boston,	1853–4.
William B. Chapman,	Cincinnati,	1854–5.
John Meakim,	New York,	1855–6.
George W. Andrews,	Baltimore,	1856–7.
Charles Ellis,	Philadelphia,	1857–8.
John L. Kidwell,	Georgetown,	1858–9.

FIRST VICE PRESIDENTS.

George W. Andrews,	Baltimore,	1852–3.
George D. Coggeshall,	New York,	1853–4.
Henry T. Cummings,	Portland,	1854–5.
C. B. Guthrie,	Memphis,	1855–6.
John L. Kidwell,	Washington, D. C.,	1856–7.
James Cooke,	Fredericksburg,	1857–8.
Edward R. Squibb,	Brooklyn, N. Y.,	1858–9.

SECOND VICE PRESIDENTS.

Samuel M. Colcord,	Boston,	1852–3.
Alexander Duval,	Richmond,	1853–4.
John Meakim,	New York,	1854–5.
Charles Ellis,	Philadelphia,	1855–6.
Frederick Stearns,	Detroit,	1856–7.
S. P. Peck,	Bennington, Vt.,	1857–8.
James O'Gallagher.	St. Louis,	1858–9.

THIRD VICE PRESIDENTS.

C. Augustus Smith,	Cincinnati,	1852–3.
C. B. Guthrie,	Memphis,	1853–4.
Joseph Laidley,	Richmond,	1854–5.
H. F. Fish,	Waterbury, Ct.,	1855–6.
H. T. Kiersted,	New York,	1856–7.
A. E. Richards,	Plaquemine, La.,	1857–8.
R. Battey,	Rome, Ga.,	1858–9.

RECORDING SECRETARIES.

Geo. D. Coggeshall,	1852–3.	Edw. S. Wayne,	1854–5.
Edward Parrish,	1853–4.	W. J. M. Gordon,	1855–8.

CORRESPONDING SECRETARIES.

Wm. Procter, Jr.,	1852–3.	Edw. Parrish,	1857–8.
Wm. B. Chapman,	1853–4.	Ambrose Smith,	1858–9.
Wm. Procter, Jr.,	1854–7.		

TREASURERS.

Alfred B. Taylor,	1852–4.	J. S. Aspinwall,	1856–7.
S. M. Colcord,	1854–6.	S. M. Colcord,	1857–9.

LIST OF OFFICERS FOR 1858-59.

PRESIDENT,

JOHN L. KIDWELL, Georgetown, D. C.

VICE PRESIDENTS,

1st. EDWARD R. SQUIBB, M. D., - -	New York.
2d. JAMES O'GALLAGHER, - - -	St. Louis, Mo.
3d. ROBERT BATTEY, - - -	Rome, Georgia.

TREASURER,

SAMUEL M. COLCORD, - - -	Boston, Mass.

RECORDING SECRETARY,

W. J. M. GORDON, - - -	Cincinnati, O.

CORRESPONDING SECRETARY,

AMBROSE SMITH, - - - -	Philadelphia, Pa.

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SAMUEL S. GARRIGUES, Chairman, Philadelphia.

HENRY W. LINCOLN, Boston. F. S. WALSH, Washington, D. C.
EDWARD PARRISH, Philadelphia. W. J. M. GORDON, Cincinnati.

COMMITTEE ON THE PROGRESS OF PHARMACY.

WILLIAM PROCTER, Jr., Chairman, Philadelphia.

WILLIAM S. THOMPSON, Baltimore. JOHN JACKSON, Knoxville, Tenn.
WILLIAM A. BREWER, Boston. AMBROSE SMITH, Philadelphia.

PROCEEDINGS

OF THE

American Pharmaceutical Association

BOSTON MEDICAL LIBRARY ASSOCIATION

SEVENTH ANNUAL MEETING

HELD IN WASHINGTON, D. C.

SEPTEMBER 1858,

WITH

THE CONSTITUTION AND LIST OF MEMBERS.

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